DOCUMENT RESUME

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ABSTRACT

The document contains a user's manual and three bibliographies pertaining to Montgomery County, Maryland's Gifted Science Project, a program to provide resources to students in grades 3-8 who are motivated in science. A user's manual offers guidelines for using the project's primary product--the Project Resource File, a collection of resources (reproduced on microfiche) to enrich the studies of an individual gifted student. A bibliography on career information highlights recently published materials on science or science-related jobs and/or careers. A project ideas bibliography focuses on published materials individual students can use in completing a science project in such areas as organic chemistry and cellular biology. The third bibliography lists materials for use in developing students' skills in such science processes as laboratory skills, science problem solving, and data collection. Information on entries contained within the three bibliographies include: grade, topic, category, title and source, author, publisher, publication date, price, special instructions (when applicable), and a brief description. (SW)

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Gifted Science Project

USER'S MANUAL

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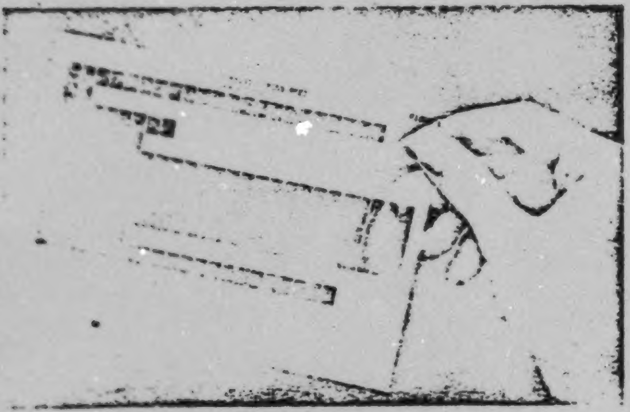
ED226566

HOW TO USE THE PROJECT RESOURCE FILE FOR A GIFTED SCIENCE STUDENT, GRADES 3 - 8

The Project Resource File (PRF), developed by the MCPS Gifted Science Project under a federal grant, is a collection of resources you can use to enrich the studies of an individual gifted student who is motivated in science. Included are community resources, who have agreed to help an individual student in various ways, and published (print and non-print) materials a gifted student can use independently.

The PRF is reproduced on microfiche, also known as fiche. Each microfiche card stores many pages of information. If you are not familiar with this medium and need assistance in using a microfiche reader, consult your media specialist.



Procedures for Using This Resource

1. IDENTIFY ELIGIBLE STUDENTS:

If your school has not identified gifted students, you should consult the MCPS documents "Procedures for Selection of Elementary Students to Participate in Gifted and Talented Programs" and/or "Procedures for Selection of Secondary Students to Participate in Gifted and Talented Programs." These documents have been distributed to your school and suggest procedures for identifying appropriate students. When selecting a student, keep in mind that the resources are designed for an individual who is not only gifted, but strongly motivated to study science.

2. DETERMINE THE STUDENT'S SPECIFIC INTERESTS:

Having the student's specific interests clearly defined will make the PRF easy to use for three reasons:

- Appropriate resources can be quickly located.
- The student's needs can be clearly described to the prospective resource person.
- The resource person will be better prepared to help the student.

The resources in the PRF have been matched with topics in the MCPS Science Instructional System:

ENERGY
LAB SKILLS — NATURE OF SCIENCE
LIVING THINGS
LIVING THINGS — ENVIRONMENT
MATTER
UNIVERSE IN CHANGE

For example, assume that your student is a gifted fifth grader who expresses an interest in geology. You ask her to be more specific in defining her interest. She replies that she is most interested in volcanoes and that she would like to talk to a volcano expert and then do a project. This information suggests that you select UNIVERSE IN CHANGE as the topic which will most likely provide appropriate resources for the study of volcanoes.

3. SELECT THE APPROPRIATE RESOURCE CATEGORIES:

All resources in the PRF have been classified by categories. After you have determined your student's specific science interests, select one or more resource categories that will best match your student's needs. The resource categories are listed and defined on the following page. An example of each is also provided.

In selecting resource categories, keep in mind that community resources generally require transportation to a site away from school, and parents usually provide transportation. Student use of published materials generally does not require transportation.

In the example described previously, the fifth grade student wants to talk to a volcano expert. The resource category "Mentor" is the most likely source to meet the student's needs.

EC151061

Resource Categories and Examples in the PRF

COMMUNITY RESOURCES

a) Activities — demonstrations, investigations, or experiments that are identified and supervised by resource persons and that support selected topics and objectives.

Example: The student will help a forester conduct an inventory of woodland plants and environmental conditions in a forest environment.

b) Awards and Competitions — recognition earned by developing and presenting a science project or paper.

Example: The student will participate in the Montgomery Area Science Fair.

c) Courses, Lectures, and Seminars — science programs sponsored by educational institutions or organizations.

Example: The student will attend a health seminar sponsored by the National Institutes of Health.

d) Libraries — specialized collections of science-related media.

Example: The student will use the Meadowside Nature Center Library under the direction of a naturalist.

e) Mentors — resource persons who discuss by telephone or in person science topics and objectives and might suggest reading material, ideas for further work, and other resources.

Example: The student will meet with a scientist from NASA and discuss the student's interests.

f) Visits — behind-the-scenes tours not normally available to the public or public tours related to science topics and objectives.

Example: The student will tour the University of Maryland Cyclotron.

PUBLISHED MATERIALS

a) Career Information — published materials that describe science or science-related jobs and careers.

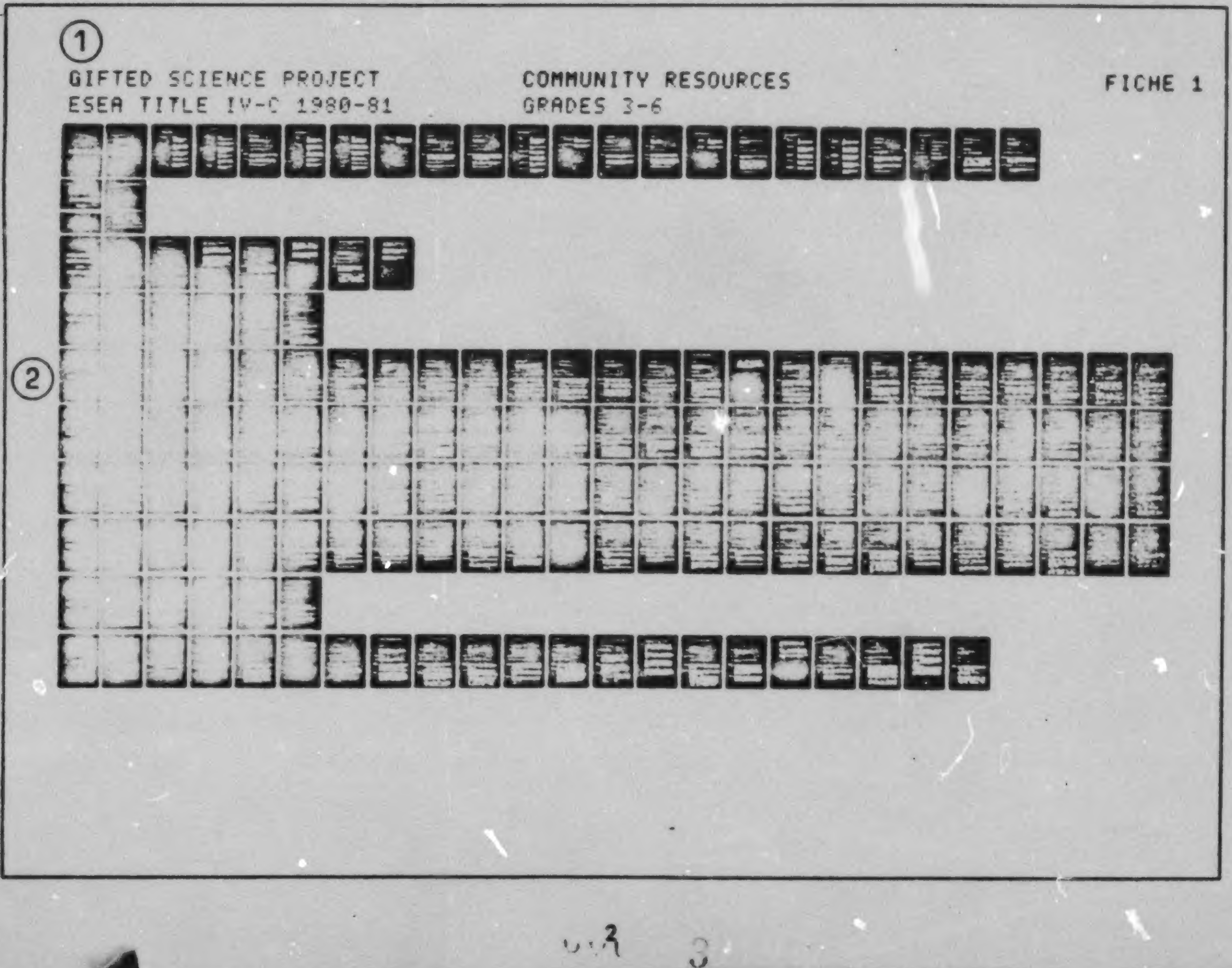
Example: The student will use the book *Veterinary Medicine and Animal Care Careers* to learn about science careers.

b) Project Ideas — published materials that describe science investigations for use by students on an individual basis or with a resource person.

Example: The student will use the book *Adventures in Electrochemistry* to develop a science project.

c) Science Processes — published materials that describe science procedures and skills, such as laboratory techniques; suggestions for science problem solving; and the collection, processing, analysis, and presentation of data.

Example: The student will use the book *How to Make Your Science Project Scientific* to develop science process skills.



4. USE THE INDEX FOR YOUR STUDENT'S GRADE LEVEL TO LOCATE POSSIBLE RESOURCES:

Following our example, you now have the necessary information to use the index:

- Your Grade 5 student is interested in volcanoes.
- The Science Instructional System topic is UNIVERSE IN CHANGE.
- The appropriate resource category is "Mentor."

Now, consult your PRF Index, Grade 5, UNIVERSE IN CHANGE. (This index also appears on microfiche.) With the help of the student, note a few possible resources that match his/her interests and their location in the PRF. You are now ready to use the PRF file. Before pursuing your resource further, check the folder (housed in your IMC) which shows changes and updated information not shown on microfiche.

5. HOW TO SELECT A RESOURCE:

Now that you have made some tentative selections of resources, request the appropriate PRF microfiche card(s) from your media specialist. Community Resources and Published Materials are located on separate fiche and are clearly marked. The illustration on the facing page shows a sample microfiche card.

The applicable resource categories are found in the first column on the fiche ①. The category "Mentor" ② begins on row 5. As you scan the fiche, select a few appropriate resources, noting the title/author or, in the case of community resources, the person's name, telephone number, special instructions, and other pertinent information.

A NOTE ON GRADE LEVELS

The Project Resource File is divided into grade levels. Many people serving as community resources have agreed to help individual students in specific grades only. Thus, it is **imperative** that you contact **only** those community resources listed for your student's grade level.

The situation is more flexible for published materials. Use your best judgement in selecting appropriate published materials for your student. The GSP staff has designated grade levels for these materials using subjective criteria; you may find some materials chosen for other grade levels also appropriate for your student. Again, this option applies **only** to published materials — **not** to community resources. If, for example, you had difficulty locating resources on volcanoes for your student to use, you could seek publications at other grade levels, but you could **not** utilize community resources for other grade levels.

Although the MCPS Science Instruction System designates specific topics for specific grade levels, individual students in all grades should be permitted to explore any topic they find interesting, even if it is outside the MCPS science curriculum. In other words, even though ENERGY and MATTER are not included in the Grade 7 curriculum, the PRF provides resources for a student in Grade 7 who has an interest in these subjects.

6. ARRANGE FOR THE STUDENT TO USE A COMMUNITY RESOURCE:

The following sequence of events is based on the experience of teachers and GSP staff during the GSP tryout. Some students experienced great disappointment when resources were promised that could not be provided; thus it is important that you take the following sequence of steps in arranging a student's appointments with community resources.

a) Clarify the student's specific interests and assess his/her interest in pursuing a resource.
b) Select tentative resources from the index and ask the student to help decide which one(s) to pursue.
c) Gather the information you need about resources from the PRF.
d) Discuss the program with the student's parent(s) and find out if the parents will be able to provide transportation. Determine tentative dates and times the student could meet with a resource person. Do NOT give the student or parent telephone numbers of prospective resource people; the resource people expect that arrangements will be made by teachers.
e) Contact the resource person, taking care to follow any special instructions described on the microfiche. Describe the student's interests and find out if the resource person is available to participate in the program at this time, as some are not available during certain times of the year. Make necessary arrangements for a student appointment. IT IS **EXTREMELY** IMPORTANT THAT **ONLY** THE TEACHER, MEDIA SPECIALIST, OR OTHER SCHOOL STAFF MEMBER MAKE THE INITIAL CONTACT WITH THIS PERSON. Individuals who have agreed to serve as resources have been assured that a teacher — **not** a student or parent — will call to make arrangements. If this procedure is compromised, resource people may be discouraged from continued participation in the program.
f) Notify the student and parent(s) of the arrangements. Explain that any additional appointments scheduled after the initial meeting will be determined by the resource person's judgement of the situation. Parents should be told that any additional meetings will depend upon the resource person's schedule, needs, and evaluation of what might be accomplished for the student. Arrangements for any subsequent meetings are negotiated by resource people and parents.

7. ARRANGE FOR THE STUDENT TO USE PUBLISHED MATERIALS:

If you have selected a Published Materials resource, ask the media specialist to assist you in locating it. If your student wants to use a publication that is not available in your media center collection, ask the media specialist to check with other schools and public libraries and, if possible, arrange an interlibrary loan. Public libraries can be asked to set aside a book so that the student or parents can pick it up. If you are unable to locate the particular resource you are looking for, either ask the media specialist to help you find a similar book, or select another resource from the PRF.

8. REVIEW THE DO AND DON'T LIST THAT FOLLOWS:

The following checklist summarizes the things to keep in mind when using the PRF. Being familiar with these points will help avert problems for you, your student, and resource people.

DO AND DON'T LIST
FOR USING THE PROJECT RESOURCE FILE

Aspects of Using the Project Resource File	DO	DON'T
Selection of Students	Select only bona fide gifted pupils. If there is doubt regarding a student's ability, don't select the student. Select students who are strongly motivated to study science topics. Help students get background information before appointments.	Compromise the use of resources by recommending unqualified students. Resource persons expect highly academic and highly motivated students. Select students who are not motivated to study science topics. Send a student with inadequate preparation or background to use a resource.
Project Procedures	Follow all established procedures. Help students clarify their interests. Stay within grade level when choosing community resources. Read the Project Resource File entry sheets carefully and observe the restrictions, procedures, and cautions which appear in the SPECIAL INSTRUCTIONS. Notify parents when a resource must be used away from the school. Involve the media specialist when locating published materials. Call the project staff when a problem develops that cannot be resolved at the local school level. The GSP phone number is 279-3500.	Suggest, expect, or allow students or parents to make initial contacts with community resources. Remove the Project Resource File from the school media center. Compromise the Project Resource File by giving it to students or persons outside the teaching staff.
Selection of Resources	Carefully determine the student's specific science interests. Choose resources carefully. Consider the student's personality, background, strengths, and weaknesses. Expect an occasional delay when arranging the use of a resource.	Pursue excessive numbers of resources at one time.
Relations with Resource Persons	Honor appointments and arrangements with outside resources. Notify the resource as soon as possible if it is necessary to cancel a student's appointment.	Pass on discipline or motivation problems to resource people. Expect resource persons to work with students other than on an individual basis. Publicize the personnel information described in the Project Resource File. Share personnel references with anyone other than MCPS staff.
Public Relations	Publicize the services provided by the Project Resource File.	

Gifted Science Project: TEACHER CHECKLIST

This checklist is intended for your convenience; you are not required to use it but may find it to your advantage since it summarizes information you need to know to use the project resources. Additional copies of this checklist are available from your media specialist. If you need assistance, contact the Gifted Science Project office at 279-3500.

Student:
Grade:
Date:

Student's Home Telephone:
Parent's Work Telephone:

Student's Specific Science Interests:

Student's Special Needs/Other Considerations:

Topics

Energy
Lab Skills - Nature of Science
Living Things
Living Things - Environment
Matter
Universe in Change

Resource Categories

Community Resources
- Activities
- Awards and Competitions
- Courses, Lectures, and Seminars
- Libraries
- Mentors
- Visits

Published Materials
- Career Information
- Project Ideas
- Science Processes

- Make tentative resource selections from the PRF Index.
- Narrow down choices with your student.
- Use the PRF (on microfiche in your IMC) and select resources.
- Discuss the project and possible resources with parent(s). If community resources are to be used, obtain tentative dates and times that transportation is available. Do **not** share resource names or phone numbers.
- Arrange for use of the resource.
  - Obtain published materials.
  - Call resource person, set date and time.
- Inform parent(s) of the arrangements for a community resource.

Montgomery County Public Schools

GIFTED SCIENCE PROJECT
Department of Instructional Planning and Development
850 Hungerford Drive Rockville, Maryland 20850
Telephone (301) 279-3500

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CAREER INFORMATION BIBLIOGRAPHY

The attached bibliography was compiled by the Montgomery County Public Schools (MCPS) Gifted Science Project (GSP), ESEA Title IV-C, Grantor Project Number 30-77-3-16-0039. The project's purpose was to identify science resources for individual gifted students in Grades 3-8.

This bibliography provides information about recently published materials that describe science or science-related jobs and/or careers. A special effort was made by the GSP staff to include information published after 1977, although there are, no doubt, additional materials available.

Because these materials are intended for use by gifted students, grade level classifications have not been assigned using standard readability formulas. Prior to constructing this bibliography, the GSP staff was not able to identify a practical set of criteria for determining grade level classifications for gifted students. Thus, the GSP staff used the following subjective criteria for assigning grade level classifications:

1. The relationship of the materials to the MCPS *Program of Studies*.
2. The complexity of content presented in the materials.
3. The appearance of the materials.
4. The apparent readability of the materials.

The topic that appears at the top of each selection relates to the MCPS Program of Studies (Energy, Lab Skills - Nature of Science, Living Things, Living Things - Environment, Matter, and Universe in Change).

The entry on page 33 also appears on page 289 of the *SCIENCE PROCESSES BIBLIOGRAPHY*.

4/81

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GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: ACTIVITIES FOR EXPLORING CAREERS IN SCIENCE

AUTHOR: DAVID E. NEWTON

PUBLISHER: J. WESTON WALCH

COPYRIGHT: 1976

PRICE: $16.75 (40 PAGES, SPIRIT MASTERS)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS RESOURCE CONSISTS OF SPIRIT MASTERS; THE TEACHER WILL NEED TO DUPLICATE A COPY OF EACH ACTIVITY A STUDENT WILL USE.

DESCRIPTION: INCLUDED ARE 40 ACTIVITIES THAT WILL HELP A STUDENT EXPLORE SCIENCE CAREERS. THE ACTIVITIES ARE NOT SEQUENTIAL AND CAN BE DONE INDEPENDENTLY. THE STUDENT IS ENCOURAGED TO EXPLORE PRIMARY SOURCES (E.G., SCIENTISTS, PROFESSIONAL ORGANIZATIONS, CORPORATIONS) FOR SCIENCE CAREER INFORMATION. THE TOPICS INCLUDE SCIENCE JOB OPPORTUNITIES, CONTEMPORARY PROBLEMS IN SCIENCE, AND SCIENCE AND POLITICS.

GRADE: 6-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Agriculture and Logging and Lumber Mill Products Industries, Bulletin 1955-36

AUTHOR: U.S. Department of Labor, Bureau of Labor Statistics

PUBLISHER: U S. Government Printing Office

COPYRIGHT: 1978

PRICE: $.50 (24 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet is a reprint of selected pages from the 1978-79 edition of the Occupational Outlook Handbook. It is periodically updated; ask for the most recent edition when requesting a copy.

DESCRIPTION: Descriptions of the work, places of employment, training, qualifications, employment outlook, and earnings of workers in the agriculture, logging, and lumber mill products industries are included. Sources of additional information are provided.

Information is included on forestry, forestry technicians, range managers, soil conservationists, cooperative extension service workers, and logging and lumber mill employment.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: AGRICULTURE CAREERS

AUTHOR: GENE AND CLARE GURNEY

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1978

PRICE: $5.45 (66 PAGES)

SBN NUMBER: 0-531-01418-5

DESCRIPTION: A VARIETY OF CAREERS IN THE FIELD OF AGRICULTURE ARE DESCRIBED, RANGING FROM THOSE WHICH REQUIRE NO SPECIAL TRAINING BEYOND HIGH SCHOOL TO THOSE OPEN TO COLLEGE GRADUATES WITH DEGREES IN AGRICULTURE. EXAMPLES OF OCCUPATIONS ARE COOPERATIVE EXTENSION SERVICE WORK, POULTRY SCIENCE, VETERINARY MEDICINE, AND HORTICULTURE. SPECIAL SECTIONS COVER CAREERS FOR WOMEN IN AGRICULTURE, FINANCING COLLEGE EXPENSES, AND AGRICULTURAL CAREERS IN CANADA. SOURCES OF ADDITIONAL INFORMATION, EXPECTED INCOME LEVELS, AGRICULTURE SCHOOLS, AND AN INDEX ARE PROVIDED.

GRADE: 3-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: American Black Scientists and Inventors

AUTHOR: Edward S. Jenkins, Gossie H. Hudson, W. Sherman Jackson, and Exyie C. Ryder

PUBLISHER: National Science Teachers Association

COPYRIGHT: 1975

PRICE: $2.50 (79 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This booklet may be obtained from the National Science Teachers Association, 1742 Connecticut Ave., NW, Washington, DC 20009.

DESCRIPTION: Short biographies of twelve black scientists and inventors are presented. References and books for further reading are given after each biography.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: The American Biology Teacher,
Vol. 40, No. 3, March 1978

The American Biology Teacher,
Vol. 40, No. 4, April 1978

AUTHOR: None Given

PUBLISHER: National Association of Biology Teachers

COPYRIGHT: 1978

PRICE: $1.75 per issue, $3.50 for the two-part series

SBN NUMBER: None Given

DESCRIPTION: This two-part series consists of articles on careers in the biological sciences. It includes careers in health, animal science, entomology, agriculture, and museum science; writing in the life sciences; and several others. Sources of career information are included.

GRADE: 3-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: AMERICAN OCCUPATION SERIES

AUTHOR: NONE GIVEN

PUBLISHER: EDUCATIONAL SENSORY PROGRAMMING

COPYRIGHT: NONE GIVEN

PRICE: $6.00 (EACH CASSETTE)

SBN NUMBER: NONE GIVEN

DESCRIPTION: EACH OF THE 13 CASSETTES CONTAINS INFORMATION ON TWO OCCUPATIONS. INCLUDED IN EACH CASSETTE IS INFORMATION ON DUTIES AND RESPONSIBILITES; SPECIAL TRAINING, EDUCATION, AND EXPERIENCE; PERSONAL CHARACTERISTICS NEEDED; JOB OPPORTUNITIES AND OUTLOOK FOR THE FUTURE; SALARY RANGE; AND SOURCES OF ADDITIONAL INFORMATION.

CASSETTES ARE ENTITLED FORESTER AND FORESTRY AIDE, ENGINEER AND TYPES OF ENGINEERING, PHYSICIAN AND OSTEOPATHIC PHYSICIAN, DENTIST AND DENTAL HYGIENIST, OPTOMETRIST AND PHARMACIST, RADIOLOGIC TECHNOLOGIST AND MEDICAL RECORD LIBRARIAN, SANITARIAN AND VETERINARIAN, GEOLOGIST AND GEOPHYSICIST, METEOROLOGIST AND OCEANOGRAPHER, LIFE SCIENTIST AND BIOCHEMIST, CHEMIST AND PHYSICIST, ASTRONOMER AND ACTOR-ACTRESS, COLLEGE AND UNIVERSITY TEACHER AND ENGINEERING SCIENCE. THERE ARE NO ACCOMPANYING SCRIPTS.

GRADE: 3-6

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Animal Doctors

AUTHOR: Patricia Curtis

PUBLISHER: Delacorte Press

COPYRIGHT: 1977

PRICE: $7.95 (167 pages)

SBN NUMBER: 0-440-00140-4

DESCRIPTION: Several veterinarians discuss their attitudes toward their profession and describe their personal experiences. Supplementary information includes the history of veterinary medicine, how and where to apply to veterinary school, and how to become an animal technician or technologist.

GRADE: 3-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Ask Any Forester

AUTHOR: None Given

PUBLISHER: Society of American Foresters

COPYRIGHT: 1976

PRICE: Single copy free (5 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This publication may be obtained from the Society of American Foresters, 5400 Grosvenor Lane, Washington, DC 20014.

DESCRIPTION: Information is given on forestry as a profession. Topics covered include educational and personal qualifications, opportunities for employment, and typical salary ranges.

GRADE: 5-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: BLACKS IN SCIENCE: ASTROPHYSICIST TO ZOOLOGIST

AUTHOR: HATTIE CARWELL

PUBLISHER: EXPOSITION PRESS

COPYRIGHT: 1977

PRICE: $6.00 (96 PAGES)

SBN NUMBER: 0-682-48911-5

DESCRIPTION: THE EDUCATION, JOB EXPERIENCES, AND ACHIEVEMENTS OF 26 BLACK SCIENTISTS, EACH IN A DIFFERENT OCCUPATION, ARE SUMMARIZED. FOR EACH, SHORT DESCRIPTIONS OF OTHER SCIENTISTS IN RELATED OCCUPATIONS ARE PROVIDED. A BRIEF GLOSSARY FOLLOWS EACH CHAPTER. SOME OF THE SCIENTIFIC FIELDS INCLUDED ARE BIOPHYSICIST, DERMATOLOGIST, KIDNEY SPECIALIST, LASER PHYSICIST, NUCLEAR CHEMIST, OPTHALMOLOGIST, AND VETERINARIAN. THE APPENDIX CONTAINS A LIST OF MORE THAN 100 INVENTORS, THEIR INVENTIONS, AND PATENT DATES. A BIBLIOGRAPHY AND AN INDEX ARE INCLUDED.

GRADE: 5-8

TOPIC: ENERGY

CATEGORY: CAREER INFORMATION

TITLE: Career Choice Aid in Engineering/Engineering Technology

AUTHOR: None Given

PUBLISHER: Engineers' Council for Professional Development

COPYRIGHT: None Given

PRICE: $.35 (16 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Engineers' Council for Professional Development, 345 East 47th Street, New York, NY 10017.

DESCRIPTION: Qualifications necessary for a career in engineering or engineering technology are presented. Areas of specialization and questions designed to facilitate decision making are also given. Names and addresses of professional organizations are listed.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Career Guide 2000: Fishery, Forestry, Wildlife, and Related Occupations

AUTHOR: W.J. Haagman

PUBLISHER: Remington House

COPYRIGHT: 1977

PRICE: $3.00 (36 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: This pamphlet describes educational and experience requirements for employment in life science occupations, salary ranges, and job descriptions for the public and private sectors. Occupational titles include oceanographer, fishery biologist, entomologist, zoologist, forester, firefighter, aquatic chemist, refuge manager, waterfowl biologist, limnologist, geologist, and microbiologist. Sources of additional information, including colleges and universities, and a reading list are provided.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Career Guide to the Animal Health Field

AUTHOR: M. Leigh Simmons, D.V.M.

PUBLISHER: Harwal Publishing Co.

COPYRIGHT: 1980

PRICE: $6.95 (122 pages)

SBN NUMBER: 0-9320-36-01-5

DESCRIPTION: The book provides an overview of the future demand for workers in animal health fields. It explains preparation needed for attending veterinarian school. It contains descriptions of current accredited colleges and universities, programs and their admission requirements for the fields of veterinarian, animal health technician, and laboratory technician.

GRADE: 7-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: A Career in Astronomy

AUTHOR: None Given

PUBLISHER: American Astronomical Society

COPYRIGHT: 1974

PRICE: $.25 (20 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be obtained from American Astronomical Society, 211 Fitz [illegible]ndolph Road, Princeton, New Jersey 18540.

DESCRIPTION: Careers in astronomy are presented by examining the nature and history of astronomy, astronomy experiments, the work of astronomers, opportunities in astronomy, and educational requirements for the pursuit of astronomy careers. Sources of additional information are listed, and a selected bibliography is provided.

GRADE: 3-6

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: A CAREER IN ECOLOGY

AUTHOR: NONE GIVEN

PUBLISHER: ECOLOGICAL SOCIETY OF AMERICA

COPYRIGHT: NONE GIVEN

PRICE: FREE (8 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: SINGLE COPIES OF THIS PAMPHLET CAN BE OBTAINED FREE. BULK ORDERS CAN BE PLACED FOR $.05 PER COPY. REQUESTS SHOULD BE MAILED TO DR. WILLIAM C. ASHBY, ECOLOGICAL SOCIETY OF AMERICA, DEPARTMENT OF BOTANY, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, ILLINOIS 62901.

DESCRIPTION: INCLUDED ARE A CAREER DESCRIPTION, EXPECTED WAGES, AND THE NECESSARY PREPARATION FOR AN ECOLOGY CAREER. A BRIEF BIBLIOGRAPHY IS PROVIDED.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Career Outlines

AUTHOR: National Park Service

PUBLISHER: U.S. Department of Interior

COPYRIGHT: 1978

PRICE: Free on request (21 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: Career information for a wide variety of Park Service positions is given. Science-related jobs include work in the biological areas and the work of curators, fishery biologists, foresters, geologists, naturalists, oceanographers, and wildlife biologists. Each career outline includes information on duties, location, training, salary, career potential, and basic qualifications.

GRADE: 7-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: CAREERS FOR METEOROLOGISTS

AUTHOR: NONE GIVEN

PUBLISHER: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

COPYRIGHT: NONE GIVEN

PRICE: FREE (9 PAGES, PHOTOCOPIED)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAPER CAN BE OBTAINED BY WRITING TO THE NATIONAL WEATHER SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE, SILVER SPRING, MD 20910.

DESCRIPTION: METEOROLOGY CAREERS WITH NOAA ARE DESCRIBED, AND SPECIFIC WORK LOCATIONS FOR VARIOUS TYPES OF METEOROLOGISTS ARE LISTED. POSITIONS INCLUDED ARE FORECASTER, SYNOPTIC METEOROLOGIST, RESEARCH METEOROLOGIST, CLIMATOLOGIST, AND SATELLITE METEOROLOGIST. SUGGESTED COURSEWORK AND A LIST OF COLLEGES AND UNIVERSITIES OFFERING DEGREES IN METEOROLOGY ARE PROVIDED.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Careers in Animal Biology

AUTHOR: None Given

PUBLISHER: American Society of Zoologists

COPYRIGHT: 1979

PRICE: Free (21 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Single copies of this brochure can be obtained from Business Manager, American Society of Zoologists, Box 2739, California Lutheran College, Thousand Oaks, CA 91360.

DESCRIPTION: A variety of careers in the field of zoology are described. In addition to teaching positions, descriptions include environmental sciences, marine biology, parasitology, and development of biology. Health-related careers include nursing, medical technology, occupational and physical therapy, illustration, dentistry, dental hygiene, dental assistant work, and veterinary practice. Nonacademic positions include museum work, industrial biology, and government work. Ideas are provided for financing an education. A list of publications and other sources of information is included.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: CAREERS IN BIOLOGY

AUTHOR: NONE GIVEN

PUBLISHER: AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

COPYRIGHT: 1977

PRICE: SINGLE COPY FREE (16 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THE WORK ENVIRONMENT, SALARY, AND EDUCATIONAL REQUIREMENTS FOR CAREERS IN BIOLOGY ARE PRESENTED. EXAMPLES ARE GIVEN OF THE MANY SPECIALTY AREAS WITHIN THE FIELD OF BIOLOGY, AND SOURCES OF ADDITIONAL INFORMATION ARE PROVIDED.

GRADE: 5-8

TOPIC: ENERGY, LIVING THINGS, MATTER

CATEGORY: CAREER INFORMATION

TITLE: Careers in Engineering and Engineering Technology

AUTHOR: Mary McHugh

PUBLISHER: Franklin Watts

COPYRIGHT: 1978

PRICE: $5.45 (66 pages)

SBN NUMBER: 0-531-01424-X

DESCRIPTION: Information is provided on the educational requirements, personal characteristics, salary ranges, employment opportunities, and different specialties within the engineering field. Female and black engineers are represented, with an emphasis on women in engineering. The twelve fields described are electrical, chemical, mechanical, civil, industrial, aerospace, ceramic, agricultural, metallurgical, mining, and biomedical engineering, as well as engineering technology. A list of accredited schools and an index are provided.

GRADE: 4-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: CAREERS IN ENVIRONMENTAL PROTECTION

AUTHOR: REED MILLARD

PUBLISHER: JULIAN MESSNER

COPYRIGHT: 1974

PRICE: $7.79 (188 PAGES)

SBN NUMBER: 0-671-32666-X

DESCRIPTION: INCLUDED ARE DESCRIPTIONS OF CAREERS IN ECOLOGY; ENGINEERING; AND THE LIFE, PHYSICAL, AND ENVIRONMENTAL SCIENCES AS THEY ARE RELATED TO ENVIRONMENTAL PROTECTION. ALSO INCLUDED ARE FURTHER READINGS, SOURCES OF FURTHER INFORMATION, A LIST OF AGENCIES CONCERNED WITH ENVIRONMENTAL PROTECTION, AND AN INDEX.

GRADE: 5-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER

CATEGORY: CAREER INFORMATION

TITLE: Careers in Focus: Exploring Occupations in Science, Fine Arts, and Humanities

AUTHOR: Lorraine M. Davis

PUBLISHER: McGraw-Hill Book Co.

COPYRIGHT: 1976

PRICE: $4.68 (152 pages, paper)

SBN NUMBER: 0-07-071045-7

DESCRIPTION: Described are activities illustrating the following selected science careers: physicist, chemist, aquatic biologist, and biologist. The activities are presented as a problem to be solved or investigated and are intended to familiarize a student with the kinds of work done in each career field.

This volume of the Careers in Focus series also includes career information on writing, performing arts, mathematics, social sciences, and visual arts.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Careers in Horticultural Sciences, rev. ed.

AUTHOR: Dorothy and Joseph Dowdell

PUBLISHER: Julian Messner

COPYRIGHT: 1975

PRICE: $7.79 (222 pages)

SBN NUMBER: 671-32739-9

DESCRIPTION: Information is provided about careers in the horticultural sciences, including training, education, and financial rewards. The following careers are included: florist, nursery manager, landscape architect, plant breeder, cannery field supervisor, agricultural researcher, entomologist, and farm advisor.

Included are a list of colleges and universities offering courses in horticultural science, landscape architecture, floral design, and floriculture. Suggestions for further reading and an index are provided.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Careers in Medicine for the New Woman

AUTHOR: Carol Jochnowitz

PUBLISHER: Franklin Watts

COPYRIGHT: 1978

PRICE: $6.90 (118 pages)

SBN NUMBER: 0-531-01444-4

DESCRIPTION: Special emphasis is placed on women in medical careers. Topics include private practice, research, public health, and nursing. A list of medical schools in the United States and Canada is provided.

Included are an index and a bibliography which emphasizes the role of women in medicine.

GRADE: 3-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: CAREERS IN OCEANOGRAPHY

AUTHOR: ROBERT B. ABEL

PUBLISHER: SEA GRANT COLLEGE PROGRAM, TEXAS A&M UNIVERSITY

COPYRIGHT: 1979

PRICE: FREE (12 PAGES, PAPER)

ISBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: FREE COPIES OF THIS BROCHURE CAN BE OBTAINED FROM SEA GRANT COLLEGE PROGRAM, TEXAS A&M UNIVERSITY, COLLEGE STATION, TEXAS 77843.

DESCRIPTION: A DESCRIPTION OF CAREERS IN OCEANOGRAPHY IS PROVIDED. INCLUDED ARE A DISCUSSION OF THE VARIETY OF SCIENTISTS IN THE FIELD OF OCEANOGRAPHY, EDUCATIONAL OPPORTUNITIES AND INSTITUTIONS, AND OCCUPATIONAL POSSIBILITIES. ADDRESSES ARE PROVIDED FOR OBTAINING ADDITIONAL INFORMATION.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Careers in Oceanography: Romance vs. Reality

AUTHOR: John McManus

PUBLISHER: Neritic Enterprises

COPYRIGHT: 1979

PRICE: $3.75 (40 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: This booklet describes career opportunities, education, and experience required for specific jobs in the field of oceanography. The fields described include biological oceanography, physical oceanography, chemical oceanography, ocean engineering, geological oceanography, applied oceanography, and marine sciences.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Careers in the Earth Sciences

AUTHOR: Reed Millard and the editors of Science Book Associates

PUBLISHER: Julian Messner

COPYRIGHT: 1975

PRICE: $7.79 (191 pages)

SBN NUMBER: 0-671-32753-4

DESCRIPTION: Included are descriptions of careers in the exploration of the earth, seas, and atmosphere. Educational requirements, employment locations, and salaries are discussed. A glossary, suggested readings, a list of sources of further information, and an index are provided.

GRADE: 3-6

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: CAREERS IN THE HEALTH FIELD, REV. ED.

AUTHOR: ESSIE E. LEE

PUBLISHER: JULIAN MESSNER

COPYRIGHT: 1974

PRICE: $7.29 (192 PAGES)

SBN NUMBER: 0-671-32513-2

DESCRIPTION: SCIENCE AND OTHER CAREERS RELATED TO THE HEALTH FIELD ARE DESCRIBED. SOME SCIENCE EXAMPLES ARE CYTOLOGIST, RADIOLOGICAL TECHNICIAN, NURSE'S AIDE, AND MEDICAL SECRETARY. THE INFORMATION ON PLANNING AND PRACTICING THE CAREERS IS PRESENTED IN STORY AND CONVERSATION STYLE. ABOUT 50 SOURCES OF FURTHER INFORMATION AND AN INDEX ARE INCLUDED.

35

GRADE: 3-6

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Careers in Wildlife Conservation

AUTHOR: John Madson and Ed Kozicky

PUBLISHER: Olin Corporation

COPYRIGHT: 1974

PRICE: Single copy free (36 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Copies of this brochure can be obtained from the Conservation Department, Winchester-Western Division, Olin Corporation, East Alton, Illinois 62024.

DESCRIPTION: This booklet describes the work of the wildlife biologist, wildlife manager, conservation officer, wildlife information-education agent, conservation aide, and wildlife conservation administrator. Required academic preparation and degrees for these occupations are described. Colleges and universities offering related programs are listed.

GRADE: 3-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Careers Related to Science

AUTHOR: None Given

PUBLISHER: Denoyer-Geppert Audio-Visual

COPYRIGHT: 1977

PRICE: $66.00 (Filmstrip with cassettes)

SBN NUMBER: 0-87453-050-4

DESCRIPTION: This is a kit consisting of three filmstrips with cassettes. The kit includes a Program Supplement written as a teacher's guide. It contains a typed script of the cassette narrations, additional notes on the persons interviewed, sources of additional information on each career, and a general bibliography on careers.

Included are personal interviews with 14 men and women, who candidly discuss their careers in science areas. Careers included are laboratory assistant, nurse, park technician, chemical engineer, and astronomer.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: THE CHALLENGE OF METEOROLOGY

AUTHOR: NONE GIVEN

PUBLISHER: AMERICAN METEOROLOGICAL SOCIETY

COPYRIGHT: 1979

PRICE: SINGLE COPY FREE (16 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE ORDERED FROM THE AMERICAN METEOROLOGICAL SOCIETY, 45 BEACON STREET, BOSTON, MASSACHUSETTS 02108.

DESCRIPTION: THE MANY FACETS OF METEOROLOGY ARE DISCUSSED, ALONG WITH OPPORTUNITIES FOR EMPLOYMENT, SALARY RANGES, AND NECESSARY PREPARATION. SPECIALTIES INCLUDED ARE THEORETICAL RESEARCH, APPLIED RESEARCH, OPERATIONAL METEOROLOGY, ENGINEERING METEOROLOGY, AND TEACHING.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: CAREER INFORMATION

TITLE: Chemical Engineering

AUTHOR: David H. Killeffer

PUBLISHER: American Chemical Society

COPYRIGHT: 1967

PRICE: $4.50 (48 pages, paper)

SBN NUMBER: 8412-0272-9

SPECIAL INSTRUCTIONS: The teacher should carefully review the reading level of this resource before recommending it to a student. There is some technical language on general chemistry topics.

DESCRIPTION: The author is a chemical engineer. He describes his career in applying the information found by research chemists to make practical, familiar products such as synthetic rubber and antibiotics, and for solving problems of waste chemicals and air and water pollution. The emphasis is on the relationship of chemistry to engineering. The appendix includes information on the training, salaries, and other requirements for a chemical engineering career. A bibliography and an index are provided.

GRADE: 7-8

TOPIC: MATTER

CATEGORY: CAREER INFORMATION

TITLE: CHEMISTRY CAREERS

AUTHOR: L.B. TAYLOR

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1978

PRICE: $5.95 (62 PAGES)

SBN NUMBER: 0-531-01420-7

DESCRIPTION: THE JOB REQUIREMENTS, OPPORTUNITIES, SALARY RANGES, NECESSARY PERSONAL QUALITIES, AND EDUCATION NEEDED TO JOIN THE WORK FORCE OF THE CHEMICAL INDUSTRY ARE DESCRIBED. INCLUDED ARE RESEARCH, TECHNICAL, AND INDUSTRIAL CHEMISTRY CAREERS. OTHER CAREERS IN SALES, MARKETING, SUPERVISION, AND LAW ARE DISCUSSED.

INCLUDED ARE ADDITIONAL SOURCES OF INFORMATION, A BIBLIOGRAPHY, AND AN INDEX.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: CAREER INFORMATION

TITLE: CHROMATOGRAPHY

AUTHOR: GUY ALEXANDER

PUBLISHER: AMERICAN CHEMICAL SOCIETY

COPYRIGHT: 1977

PRICE: $4.50 (165 PAGES, PAPER)

SBN NUMBER: 0-8412-0277-X

DESCRIPTION: THE AUTHOR DESCRIBES HIS PERSONAL CAREER IN CHEMISTRY AND HIS PROFESSIONAL EXPERIENCES RANGING FROM HIS DOCTORAL RESEARCH STUDIES TO HIS WORK AS AN INDUSTRIAL CHEMIST FOR PRIVATE COMPANIES. DR. ALEXANDER'S SPECIALTY IS CHROMATOGRAPHY, A TECHNIQUE FOR ANALYZING COMPONENTS OF CHEMICAL COMPOUNDS.

INCLUDED ARE AN INDEX, A GLOSSARY, AND A LIST OF THE LITERATURE CITED.

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: CONSERVATION CAREERS, REV. ED.

AUTHOR: NONE GIVEN

PUBLISHER: NATIONAL WILDLIFE FEDERATION

COPYRIGHT: 1975

PRICE: FREE (10 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE ORDERED FROM THE NATIONAL WILDLIFE FEDERATION, 1412 SIXTEENTH STREET, NW, WASHINGTON, DC 20036.

DESCRIPTION: INFORMATION ON CONSERVATION CAREERS IS PRESENTED IN QUESTION-AND-ANSWER FORMAT. KINDS OF JOBS, EDUCATION REQUIRED, JOB AND PAY PROSPECTS, AND A BIBLIOGRAPHY ARE INCLUDED. THE LISTING OF TYPES OF JOBS, THOUGH VERY BRIEF, COVERS A WIDE RANGE OF FIELDS, INCLUDING AREAS NOT COVERED BY OTHER CONSERVATION CAREER PUBLICATIONS (E.G., URBAN PLANNING).

GRADE: 4-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Contemporary Women Scientists of America

AUTHOR: Iris Nobel

PUBLISHER: Julian Messner

COPYRIGHT: 1979

PRICE: $7.29 (158 pages)

SBN NUMBER: 0-671-32920-0

DESCRIPTION: The lives and careers of nine contemporary women scientists of America are described in detail. Seven other women scientists who influenced science in the early twentieth century are briefly described. The careers included are astronomer, biochemist, histologist, pediatrician, radiation physicist, anthropologist, meteorologist, physiologist, microbiologist, nuclear physicist, marine biologist, crystallographer, geneticist, and electrical engineer. An index is included.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Contributions of Women: Science

AUTHOR: Diane Emberline

PUBLISHER: Dillon Press

COPYRIGHT: 1977

PRICE: $5.95 (158 pages)

SBN NUMBER: 87518-136-8

DESCRIPTION: The careers and contributions of six women scientists are described: Annie Cannon, astronomer; Lillian Moller, engineer; Margaret Mead, anthropologist; Rachel Carson, marine biologist; Ruth Patrick, water biologist; and Fugenia Clark, icthyologist.

Brief biographies of ten other women, past and present, are given.

GRADE: 3-4

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: A DAY IN THE LIFE OF A VETERINARIAN

AUTHOR: WILLIAM JASPERSOHN

PUBLISHER: LITTLE, BROWN AND CO.

COPYRIGHT: 1978

PRICE: $7.95 (74 PAGES)

SBN NUMBER: 0-316-45810-4

DESCRIPTION: THIS IS AN ACCOUNT OF A VETERINARIAN'S ACTIVITIES DURING A TYPICAL DAY. HE IS SHOWN TREATING PETS IN A CLINIC AND IN OPERATING ROOMS, MAKING FARM VISITS, AND TAKING EMERGENCY CALLS.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: *Engineering and Related Occupations*, Bulletin 1955-20

AUTHOR: U.S. Department of Labor, Bureau of Labor Statistics

PUBLISHER: U.S. Government Printing Office

COPYRIGHT: 1978

PRICE: $.50

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet is a reprint of selected pages from the 1978-79 edition of the *Occupational Outlook Handbook*. It is periodically updated; ask for the most recent edition when requesting a copy.

DESCRIPTION: Descriptions of the work, places of employment, training and qualifications, employment outlook and earnings of engineers (and related occupations) are included. Sources of additional information are provided.

Information is included on engineers, aerospace engineers, ceramic engineers, chemical engineers, industrial engineers, mechanical engineers, metallurgical engineers, mining engineers, petroleum engineers, broadcast technicians, drafters, engineering and science technicians, and surveyors.

GRADE: 3-5

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Engineering: Creating a Better World

AUTHOR: None Given

PUBLISHER: Engineers' Council for Professional Development

COPYRIGHT: 1970

PRICE: $.25 (20 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Engineers' Council for Professional Development, 345 East 47th Street, New York, NY 10017.

DESCRIPTION: The pamphlet explains what various types of engineers and engineering technicians do. A list of job titles and definitions is included. The names and addresses of engineering societies are provided as sources of additional information.

GRADE: 6-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Environmental Scientists and Conservation Occupations, Bulletin 1955-19

AUTHOR: U.S. Department of Labor, Bureau of Labor Statistics

PUBLISHER: U.S. Government Printing Office

COPYRIGHT: 1978

PRICE: $.95 (18 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet is a reprint of selected pages from the 1978-79 edition of the Occupational Outlook Handbook. It is periodically updated; ask for the most recent edition when requesting a copy.

DESCRIPTION: Career information is provided concerning educational and training requirements, employment outlook, and opportunities for advancement for the environmental science and conservation occupations. Occupations include conservationist, environmental scientist, geophysicist, meteorologist, and oceanographer. Sources of additional information are provided for each career.

GRADE: 6-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Fish and Wildlife Service Descriptive Letter

AUTHOR: None Given

PUBLISHER: U.S. Department of the Interior

COPYRIGHT: 1977

PRICE: Free (10 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This open letter can be obtained by writing to Director, Fish and Wildlife Service, U.S. Department of the Interior, Washington, DC 20240.

DESCRIPTION: This open letter describes Federal job opportunities and requirements for the following: park ranger, special agent (wildlife), summer aide, fishery biologist, and wildlife biologist.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Fisheries as a Profession: A Career Guide for the Field of Fisheries Science

AUTHOR: None Given

PUBLISHER: American Fishery Society

COPYRIGHT: 1976

PRICE: $.25, single copy (12 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This brochure can be ordered from the American Fisheries Society, 5400 Grosvenor Lane, Washington, DC 20014.

DESCRIPTION: The brochure describes the education and experience needed for employment in the fisheries science field. Job titles include fishery biologist, marine scientist, technician, and aide. The demand for people in the field is stressed. Sources of additional information are included.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: GEOLOGY: SCIENCE AND PROFESSION

AUTHOR: NONE GIVEN

PUBLISHER: AMERICAN GEOLOGICAL INSTITUTE

COPYRIGHT: 1976

PRICE: $1.00 (31 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: COPIES OF THIS PAMPHLET CAN BE ORDERED FROM:
AMERICAN GEOLOGICAL INSTITUTE, 5205 LEESBURG PIKE,
FALLS CHURCH, VIRGINIA 22041.

DESCRIPTION: INCLUDED ARE BACKGROUND INFORMATION ABOUT GEOLOGY, A DESCRIPTION OF GEOLOGICAL CAREERS, PERSONAL AND EDUCATIONAL QUALIFICATIONS FOR A GEOLOGY CAREER, AND PERSONAL REWARDS.

ADDITIONAL SOURCES OF INFORMATION ARE PROVIDED.

GRADE: 4-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Geophysics: The Earth in Space

AUTHOR: None Given

PUBLISHER: American Geophysical Union

COPYRIGHT: 1976

PRICE: Free (13 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: The field of geophysics is defined and described in this pamphlet. Ten subfields are discussed: geodesy, seismology, meteorology, geomagnetism and paleomagnetism, oceanography, volcanology, geochemistry, petrology, hydrology, tectonophysics, planetology and solar-planetary relationships. The address of the Bureau of Labor Statistics is provided for obtaining additional information on salary scales and employment trends.

GRADE: 7-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Getting into Medical School

AUTHOR: Donald J. Salomon

PUBLISHER: W.B. Saunders Co.

COPYRIGHT: 1979

PRICE: $6.50 (167 pages, paper)

SBN NUMBER: 0-7216-8499-8

DESCRIPTION: This book explains the preparation needed by the high school and college student to compete for entrance into medical school. Topics included are the decision to take a pre-med program, courses and grades needed, the Medical College Admission Test (MCAT), the application and interview processes, and a directory of U.S. medical school admissions offices. For up-to-date specific admissions information, the author recommends use of the book Medical School Admissions Requirements, published annually by the Association of American Medical Colleges.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Health Occupations, Bulletin 1955-28

AUTHOR: U.S. Department of Labor, Bureau of Labor Statistics

PUBLISHER: U.S. Government Printing Office

COPYRIGHT: 1978

PRICE: $1.25 (24 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet is a reprint of selected pages from the 1978-79 edition of the Occupational Outlook Handbook. It is periodically updated; ask for the most recent edition when requesting a copy.

DESCRIPTION: The booklet describes occupational outlooks in the health careers, as projected by the Federal government. Descriptions include the nature of the work, places of employment, training, advancement, employment outlook, earnings, working conditions, and sources of additional information. Job descriptions cover dispensing opticians, medical technologists and technicians, medical assistants, records personnel, laboratory technicians, and therapists.

GRADE: 6-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: HEALTH PRACTITIONERS, BULLETIN 1955-27

AUTHOR: U.S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS

PUBLISHER: U.S. GOVERNMENT PRINTING OFFICE

COPYRIGHT: 1978

PRICE: $.50 (18 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET IS A REPRINT OF SELECTED PAGES FROM THE 1978-79 EDITION OF THE OCCUPATIONAL OUTLOOK HANDBOOK. IT IS PERIODICALLY UPDATED; ASK FOR THE MOST RECENT EDITION WHEN REQUESTING A COPY.

DESCRIPTION: DESCRIPTIONS OF THE WORK, PLACES OF EMPLOYMENT, TRAINING AND QUALIFICATIONS, EMPLOYMENT OUTLOOK, AND EARNINGS OF SEVERAL KINDS OF HEALTH PRACTITIONERS ARE INCLUDED. SOURCES OF ADDITIONAL INFORMATION ARE PROVIDED. PROFESSIONS DISCUSSED ARE PHYSICIAN, PODIATRIST, VETERINARIAN, CHIROPRACTOR, DENTIST, OPTOMETRIST, OSTEOPATHIC PHYSICIAN, AND PHARMACIST.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Helping Hands: Horizons Unlimited in Medicine

AUTHOR: None Given

PUBLISHER: American Medical Association

COPYRIGHT: 1976

PRICE: $.75 (68 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This book may be purchased from Publications: Order Department, American Medical Association, P.O. Box 821, Monroe, Wisconsin 53566.

DESCRIPTION: This factbook describes educational requirements and career opportunities in medicine. A variety of medical specialties are listed and described, as well as suggestions for high school and college course selection. A listing of medical schools in the United States and Puerto Rico shows first-year enrollment figures, tuition and fees, and estimated expenses. Lists of references, suggested readings, and medical specialty organizations are provided.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: I'M MADLY IN LOVE WITH ELECTRICITY: AND OTHER COMMENTS ABOUT THEIR WORK BY WOMEN IN SCIENCE AND ENGINEERING

AUTHOR: NANCY KREINBERG

PUBLISHER: LAWRENCE HALL OF SCIENCE

COPYRIGHT: 1977

PRICE: $1.00 (37 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: DESCRIPTIONS ARE PROVIDED OF THE CAREERS OF 18 WOMEN WHO WORK IN ENGINEERING, MATHEMATICS, PHYSICS, ASTRONOMY, CHEMISTRY, OR THE LIFE SCIENCES. EACH DESCRIPTION INCLUDES THE NECESSARY BACKGROUND, TRAINING, JOB DESCRIPTION, AND RESPONSIBILITIES OF THE POSITION. THE NAMES AND ADDRESSES OF WOMEN TO CONTACT FOR FURTHER INFORMATION ARE PROVIDED. INCLUDED ARE TITLES OF PUBLICATIONS AND ORGANIZATIONS THAT PROVIDE INFORMATION ON THE CAREER FIELDS LISTED ABOVE.

GRADE: 5-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Is Science a Possible Career for You?

AUTHOR: None Given

PUBLISHER: Research for Better Schools

COPYRIGHT: 1978

PRICE: $17.50 (88 pages, paper; 1 filmstrip)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This material can be obtained from the National Association of the Deaf, 814 Thayer Ave., Silver Spring, MD 20910.

DESCRIPTION: The filmstrip and book describe deaf people in various scientific professions. The book tells teachers how to guide deaf students into careers in science. Three divisions of topics covered are "Why Consider a Career in Science?" 7 activities; "What Do People in Science Do?" 6 activities; and "How Do You Find Out If Science Is a Career for You?" 6 activities. Several overhead transparencies and other sheets suitable for reproduction and teacher and student references are included. The filmstrip, aimed at students, gives biographical information on some deaf scientists and technicians.

GRADE: 6-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: LIFE SCIENCES: OPPORTUNITIES IN THE FEDERAL GOVERNMENT: ANNOUNCEMENT NO. 421

AUTHOR: NONE GIVEN

PUBLISHER: OFFICE OF PERSONNEL MANAGEMENT
WASHINGTON, DC 20415

COPYRIGHT: 1978

PRICE: $.50 (9 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THIS PAMPHLET INCLUDES A DESCRIPTION OF THE DUTIES AND THE EDUCATION AND EXPERIENCE REQUIREMENTS FOR FEDERAL EMPLOYMENT AS A LIFE SCIENTIST. THE FOLLOWING LIFE SCIENCE AREAS ARE INCLUDED: AGRICULTURAL MANAGEMENT, AGRONOMY, BOTANY, ECOLOGY, ENTOMOLOGY, FISHERY BIOLOGY, FORESTRY, GENERAL MICROBIOLOGY, PHARMACOLOGY, PHYSIOLOGY, PLANT PATHOLOGY, PLANT PHYSIOLOGY, PLANT PROTECTION AND CONTROL, RANGE CONSERVATION, SOIL CONSERVATION, SOIL SCIENCE, WILDLIFE REFUGE MANAGEMENT, AND ZOOLOGY. SUGGESTIONS ON HOW TO APPLY FOR POSITIONS ARE PROVIDED.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: MAKING IT IN THE ENVIRONMENTAL SCIENCES

AUTHOR: RUTH LEMBECK

PUBLISHER: CURRENT AFFAIRS

COPYRIGHT: 1975

PRICE: $44.00 (2 FILMSTRIPS AND 2 CASSETTES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: A VARIETY OF ENVIRONMENTAL OCCUPATIONS ARE EXPLORED. INCLUDED ARE BRIEF DESCRIPTIONS OF SELECTED CAREERS, CAREER LOCATIONS, DAILY ACTIVITIES, AND REQUIRED EDUCATION. FIELDS INCLUDED ARE AGRONOMY, ENTOMOLOGY, WILDLIFE BIOLOGY, FORESTRY, ENVIRONMENTAL LAW, PRESERVATION, WORKING AS A PARK RANGER, WILDLIFE CONSERVATION, ZOO WORK, VETERINARY PRACTICE, GEOLOGY, METEOROLOGY, RECREATION, AND LOBBYING. THE NEED FOR SUCH WORKERS IS DESCRIBED, AND SUGGESTIONS ARE GIVEN FOR LEARNING MORE ABOUT THEM. A TEACHER'S GUIDE IS INCLUDED.

GRADE: 4-8

TOPIC: MATTER

CATEGORY: CAREER INFORMATION

TITLE: MINORITY ENGINEERS IN THE CHEMICAL INDUSTRY: A GUIDE TO CAREER SELECTION

AUTHOR: NONE GIVEN

PUBLISHER: MANUFACTURING CHEMISTS ASSOCIATION

COPYRIGHT: 1978

PRICE: FREE (19 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE OBTAINED FROM THE MANUFACTURING CHEMISTS ASSOCIATION, 1825 CONNECTICUT AVE., NW, WASHINGTON, DC 20009.

DESCRIPTION: THE ROLE OF MINORITIES AS ENGINEERS IN THE CHEMICAL INDUSTRY IS DISCUSSED. INFORMATION IS PRESENTED ON PREPARATION FOR COLLEGE, FINANCIAL AID, EDUCATIONAL OPPORTUNITIES AND INSTITUTIONAL PROGRAMS. INCLUDED ARE BRIEF BIOGRAPHIES AND TESTIMONIALS OF PRACTICING MINORITY CHEMICAL ENGINEERS, A LIST OF DIRECTORIES OF SOURCES OF FINANCIAL AID, AND A LIST OF SOURCES OF ADDITIONAL INFORMATION.

GRADE: 5-8

TOPIC: ENERGY

CATEGORY: CAREER INFORMATION

TITLE: New Careers in Engineering Technology

AUTHOR: None Given

PUBLISHER: Engineers' Council for Professional Development

COPYRIGHT: 1975

PRICE: $.50 (19 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Engineers' Council for Professional Development, 345 East 47th Street, New York, NY 10017.

DESCRIPTION: The field of engineering technology is described and several jobs are illustrated with color photographs. The personal and educational requirements are given. A list of suggested reading materials is included.

GRADE: 5-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Occupational Brief on the Agricultural Engineer

AUTHOR: None Given

PUBLISHER: University of Maryland, Department of Agricultural Engineering

COPYRIGHT: 1979

PRICE: Free (15 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Copies of this paper might still be available from the University of Maryland. Call the Department of Agricultural Engineering to obtain ordering information.

DESCRIPTION: A description of agricultural engineering is provided, along with a discussion of nine career interest areas within the field: power and machinery, structures and environment, soil and water engineering, food engineering, agricultural waste management, electric power and processing, forest engineering, aquacultural engineering, and international agriculture. Each career area is described, and the specialized applications of each are included. Employment opportunities, working conditions, professional qualifications, expected earnings, and the required education are discussed. A list of sources is provided for further information.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Occupational Outlook for College Graduates, 1978-79 Edition, Bulletin 1956

AUTHOR: U.S. Department of Labor, Bureau of Labor Statistics

PUBLISHER: U.S. Government Printing Office

COPYRIGHT: 1978

PRICE: $8.00 (paper), $11.00 (hard cover); (266 pages)
U.S. Gov't. Printing Office Document #029-001-02-0660

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This publication is periodically updated; ask for the most recent edition when requesting a copy.

DESCRIPTION: Descriptions of the work, places of employment, training, qualifications, employment outlook, and earnings of various science occupations are included. Examples of these occupations are astronomer, biochemist, science technician, petroleum engineer, and medical laboratory worker. A variety of nonscience occupations are also included.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: The Oceanographer

AUTHOR: None Given

PUBLISHER: Society for Visual Education, Inc.

COPYRIGHT: 1974

PRICE: $19.50 (filmstrip with cassette)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This package can be ordered from the Society for Visual Education, Inc., 1345 Diversey Parkway, Chicago, Illinois 60614.

DESCRIPTION: This is one in a series of filmstrips designed to explore occupations in the fields of marine science and environment.

Research activities of one oceanographer are described, including an experiment designed to determine the effects of an electric power plant located on the coast of California. A wide range of oceanographic occupations are described, including chemical oceanography, marine geology and biology, and petroleum geology. Educational requirements, job opportunities, and salary ranges are discussed. The filmstrip ends with a list of words and phrases to know, questions for discussion and review, and a suggestion for a follow-up enrichment activity.

GRADE: 5-8

TOPIC: LIVING THINGS - ENVIRONMENT, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Oceanographic Institutions: Science Studies the Sea

AUTHOR: Peter Limburg

PUBLISHER: Thomas Nelson Inc.

COPYRIGHT: 1979

PRICE: $9.95

SBN NUMBER: 0-525-66505-1

DESCRIPTION: Included are descriptions of the types of work and research found at an oceanographic institution. The information could be helpful to a person who is thinking of a career in marine science. A discussion of government agencies' roles in ocean research, oceanography in other countries, the training of an oceanographer, and the employment outlook are provided. A glossary, suggested reading list, and index are included.

Grade: 5-8

Topic: MATTER

Category: CAREER INFORMATION

Title: Opportunities in Chemistry

Author: John H. Woodburn

Publisher: VGM Career Horizons

Copyright: 1979

Price: $3.71 (130 pages, paper)

SBN Number: None Given

Description: The past and present status of chemistry as a profession and projections into the future are presented. Included are the qualities and educational requirements, earnings, and specialties of chemistry careers. A list of professional associations and societies and additional readings are provided.

GRADE: 5-8

TOPIC: ENERGY

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN ELECTRICAL AND ELECTRONIC ENGINEERING, REV. ED.

AUTHOR: S. PAUL SHACKLETON

PUBLISHER: VOCATIONAL GUIDANCE MANUALS

COPYRIGHT: 1977

PRICE: $3.71 (127 PAGES, PAPER)

SBN NUMBER: 0-89022-223-1

DESCRIPTION: DESCRIBED ARE THE SCOPE AND HISTORY OF ELECTRICAL AND ELECTRONIC ENGINEERING, THE REQUIRED PERSONAL QUALITIES AND APTITUDES OF AN ELECTRICAL ENGINEER, EDUCATION AND LICENSING REQUIREMENTS, EMPLOYMENT OPPORTUNITIES, OPPORTUNITIES FOR ADVANCEMENT, RELATED FIELDS, AND ENGINEERING ORGANIZATIONS. INCLUDED ARE A LIST OF RECOMMENDED READINGS, A LIST OF ACCREDITED DEGREE PROGRAMS IN ENGINEERING AND ENGINEERING TECHNOLOGY, AND AN INDEX.

GRADE: 5-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN ENVIRONMENTAL CAREERS

AUTHOR: ODOM FANNING

PUBLISHER: VGM CAREER HORIZONS

COPYRIGHT: 1975

PRICE: $3.71 (251 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: CAREERS, TRAINING REQUIREMENTS, EMPLOYMENT FACTORS, AND LABOR FORECASTS ARE PRESENTED. TWO-YEAR AND FOUR-YEAR ENVIRONMENTAL EDUCATION CURRICULA ARE DESCRIBED. CATEGORIES OF ENVIRONMENTAL CAREERS ARE ENVIRONMENTAL PROTECTION AND PUBLIC HEALTH, BIOLOGY AND ECOLOGY, CONSERVATION AND RECREATION, ENVIRONMENTAL DESIGN AND LAND USE PLANNING, AND ENVIRONMENTAL GENERALIST. INCLUDED ARE A LIST OF FEDERAL ENVIRONMENTAL AGENCIES, A LIST OF VOLUNTARY ENVIRONMENTAL ORGANIZATIONS, A BIBLIOGRAPHY OF ENVIRONMENTAL PERIODICALS, AND AN INDEX.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN FOOD SCIENCE AND TECHNOLOGY

AUTHOR: JOSEPH G. ENDRES

PUBLISHER: VOCATIONAL GUIDANCE MANUALS

COPYRIGHT: 1969

PRICE: $1.95 (92 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: INCLUDED ARE EDUCATIONAL REQUIREMENTS, INCLUDING A TYPICAL PROGRAM OF STUDIES; JOB OPPORTUNITIES; AND HINTS FOR GETTING A JOB IN THE FIELDS OF FOOD SCIENCE AND TECHNOLOGY. A LIST OF COLLEGES OFFERING COURSES, PROGRAMS, AND DEGREES IN FOOD SCIENCE IS PROVIDED, AS WELL AS A SUGGESTED READING LIST AND AN INDEX.

GRADE: 5-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Opportunities in Forestry Careers

AUTHOR: E. L. Demmon

PUBLISHER: VGM Career Horizons

COPYRIGHT: 1975

PRICE: $3.71 (119 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: Included are discussions on forestry as a profession, the fields of forestry work, the personal and educational qualifications, employment opportunities, a list of forestry organizations, and schools of forestry. Recommended readings and an index are provided.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Opportunities in Geology and Geological Engineering

AUTHOR: Alfred K. Snelgrove

PUBLISHER: Vocational Guidance Manuals

COPYRIGHT: 1970

PRICE: $1.95 (159 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: Described are the historical background, employment and other opportunities, educational preparation, and duties related to the field of geology. In addition, sources of further information, a list of universities and colleges offering degree programs in geology, a list of geoscience organizations, a bibliography, and an index are given.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN NURSING

AUTHOR: KEVILLE FREDERICKSON

PUBLISHER: VOCATIONAL GUIDANCE MANUALS

COPYRIGHT: 1977

PRICE: $3.71 (148 PAGES, PAPER)

SBN NUMBER: 0-89022-233-9

DESCRIPTION: INCLUDED ARE A DESCRIPTION OF NURSING AND ITS ROLE IN SOCIETY, SALARIES, NECESSARY ATTRIBUTES, EDUCATIONAL PREPARATION, TYPES AND PLACES OF EMPLOYMENT, NURSING ORGANIZATIONS, ADDITIONAL SOURCES OF INFORMATION, A LIST OF SPECIALTY NURSING ASSOCIATIONS, A LIST OF STATE AND INTERNATIONAL NURSING ASSOCIATIONS, A DIRECTORY OF BOARDS OF NURSING, AND AN INDEX.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN OPTOMETRY

AUTHOR: FRANK M. KITCHELL

PUBLISHER: VGM CAREER HORIZONS

COPYRIGHT: 1974

PRICE: $4.95 (94 PAGES, PAPER)

SBN NUMBER: 0-685-50037-3

DESCRIPTION: THE HISTORY AND THE PROFESSION OF OPTOMETRY ARE DESCRIBED, AS WELL AS EDUCATIONAL REQUIREMENTS AND EMPLOYMENT OPPORTUNITIES (AS OF 1974). ORGANIZATIONS IN OPTOMETRY, SCHOOLS OF OPTOMETRY, AND A RECOMMENDED READING LIST ARE PROVIDED. AN INDEX IS INCLUDED.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Opportunities in Osteopathic Medicine Today

AUTHOR: Leonard E. Heffel

PUBLISHER: VGM Career Horizons

COPYRIGHT: 1974

PRICE: $4.95 (144 pages, paper)

SBN NUMBER: 0-8442-6462-8

DESCRIPTION: A description of osteopathy and a historical perspective of the field are presented. Educational requirements, licensing procedures, and the work of a Doctor of Osteopathy are discussed. The code of ethics of the American Osteopathic Association and an index are included.

GRADE: 5-8

TOPIC: LIVING THINGS, MATTER

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN PHARMACY CAREERS

AUTHOR: FRED B. GABLE

PUBLISHER: VGM CAREER HORIZONS

COPYRIGHT: 1974

PRICE: $4.95 (141 PAGES, PAPER)

SBN NUMBER: 0-685-50038-1

DESCRIPTION: THE FIELD OF PHARMACY IS DESCRIBED. INCLUDED ARE THE EDUCATION OF THE PHARMACIST, THE ROLE OF THE PHARMACIST IN THE COMMUNITY, SPECIALTY PHARMACY FIELDS, AND EMPLOYMENT OPPORTUNITIES (AS OF 1974). A LIST OF ACCREDITED SCHOOLS OF PHARMACY, NATIONAL PUBLICATIONS, AND RECOMMENDED READINGS ARE PROVIDED. AN INDEX IS INCLUDED.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: OPPORTUNITIES IN VETERINARY MEDICINE

AUTHOR: ROBERT SWOPE, V.M.D.

PUBLISHER: VGM CAREER HORIZONS

COPYRIGHT: 1979

PRICE: $3.71 (155 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: INCLUDED ARE DISCUSSIONS OF THE EDUCATION REQUIRED FOR A VETERINARIAN, THE VARIOUS TYPES OF VETERINARY PRACTICES, WOMEN IN VETERINARY PRACTICE, AND A LIST OF PROFESSIONAL VETERINARY ORGANIZATIONS. A BIBLIOGRAPHY, A LIST OF COLLEGES OF VETERINARY MEDICINE IN THE U.S. AND CANADA, AND A LIST OF PROGRAMS IN ANIMAL TECHNOLOGY ARE PROVIDED.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: Outdoor Opportunities in Forestry, Wildlife Management and Fisheries Management

AUTHOR: None Given

PUBLISHER: Employment Research Associates

COPYRIGHT: 1978

PRICE: $5.95 (52 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: The purpose of this booklet is to acquaint the reader with outdoor occupational opportunities. Educational and experience requirements are described as they relate to a variety of fields. Job descriptions, course listings, salary expectations and employment opportunities are discussed. Included are occupations in the fields of fishery science, marine biology, wildlife management and biology, and hydrology. Included are lists of courses of study with the colleges and universities offering the programs; industrial employers, trade associations, and professional and government agencies; and books, pamphlets, and references.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Physical and Life Scientists, Bulletin 1955-21

AUTHOR: U.S. Department of Labor, Bureau of Labor Statistics

PUBLISHER: U.S. Government Printing Office

COPYRIGHT: 1978

PRICE: $.50 (15 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet is a reprint of selected pages from the 1978-79 edition of the Occupational Outlook Handbook. It is periodically updated; ask for the most recent edition when requesting a copy.

DESCRIPTION: Included are descriptions of physical and life scientists' work, places of employment, training, qualifications, employment outlook, and earnings. It includes suggested sources of career information on physical and life science careers. Careers in life science, soil science, astronomy, chemistry, food science, and physics are discussed.

GRADE: 7-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: PROFESSIONAL ENGINEER

AUTHOR: NONE GIVEN

PUBLISHER: NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
EDUCATION FOUNDATION

COPYRIGHT: 1975

PRICE: $.75 (48 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THIS BOOKLET CONTAINS INFORMATION ON EDUCATIONAL REQUIREMENTS, WORK EXPERIENCE, CERTIFICATION, AND JOB OPPORTUNITIES IN ENGINEERING. IT LISTS THE ENGINEERING PROGRAMS OFFERED AT U.S. COLLEGES IN 1975. JOB CATEGORIES INCLUDE TECHNICIAN, SAFETY ENGINEER, TECHNOLOGIST, DRAFTSPERSON, AND DESIGNER.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: SCIENCE CAREER EXPLORATION FOR WOMEN

AUTHOR: WALTER S. SMITH AND KALA M. STROUP

PUBLISHER: NATIONAL SCIENCE TEACHERS ASSOCIATION

COPYRIGHT: 1978

PRICE: $2.50 (77 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS BOOKLET CAN BE OBTAINED BY ORDERING NSTA STOCK NUMBER 471-14748 FROM: NATIONAL SCIENCE TEACHERS ASSOCIATION, 1742 CONNECTICUT AVENUE, NW, WASHINGTON, DC 20009.

DESCRIPTION: PRESENTED ARE A RATIONALE FOR CAREER EXPLORATION FOR WOMEN, A DISCUSSION OF CONFLICTS AND BARRIERS WHICH MIGHT AFFECT CAREER CHOICES, AND SIX MODULES WHICH CONTAIN ACTIVITIES DESIGNED TO ASSIST FEMALES IN MAKING CAREER CHOICES. THE ACTIVITIES INCLUDE LOCATING CAREER INFORMATION, INTERVIEWING WOMEN IN SCIENCE, ANALYZING STRENGTHS AND WEAKNESSES, EXAMINING FUTURE NEEDS AND DESIRES, EXAMINING SOCIAL FACTORS AFFECTING CAREER CHOICES, DETERMINING WHAT CAREERS ARE AVAILABLE, COMPLETING A RÉSUMÉ, AND DEVELOPING FUTURE PLANS. AN APPENDIX OF RESOURCES FOR TEACHERS IS PROVIDED.

GRADE: 5-8

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: SCIENTISTS AT WORK: THE CREATIVE PROCESS OF SCIENTIFIC RESEARCH

AUTHOR: JOHN NOBLE WILFORD (ED.)

PUBLISHER: DODD, MEAD & CO.

COPYRIGHT: 1975

PRICE: $9.95 (267 PAGES)

SBN NUMBER: 0-396-07603-3

DESCRIPTION: THIS BOOK CONSISTS OF 29 INTERVIEWS WITH SCIENTISTS, WHO DESCRIBE EXPERIENCES IN THEIR INDIVIDUAL FIELDS. THROUGH THIS CASE HISTORY APPROACH, THE BOOK EXAMINES A SPECIFIC SUBJECT IN EACH FIELD. THE INTERVIEWS COVER A PANORAMA OF SUBJECTS, INCLUDING ARCHEOLOGY, PALEONTOLOGY, ASTROPHYSICS, GEOLOGY, PHYSICS, ELECTRONICS, BIOLOGY, CHEMISTRY, GENETICS, PHYSIOLOGY, ANIMAL BEHAVIOR, ECOLOGY, AND VIROLOGY.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: CAREER INFORMATION

TITLE: SILICA AND ME: THE CAREER OF AN INDUSTRIAL CHEMIST

AUTHOR: GUY ALEXANDER

PUBLISHER: AMERICAN CHEMICAL SOCIETY

COPYRIGHT: 1967

PRICE: $3.50 (111 PAGES, PAPER)

SBN NUMBER: 8412-0162-5

SPECIAL INSTRUCTIONS: THE TEACHER SHOULD CAREFULLY REVIEW THE READING LEVEL OF THIS RESOURCE BEFORE RECOMMENDING IT TO A STUDENT. SOME OF THE LANGUAGE IS TECHNICAL. SOME PRIOR GENERAL KNOWLEDGE OF CHEMICAL ELEMENTS AND COMPOUNDS IS NECESSARY.

DESCRIPTION: THE AUTHOR IS AN INDUSTRIAL CHEMIST AND FORMER UNIVERSITY PROFESSOR. THIS IS A PERSONALIZED ACCOUNT OF THE BEGINNING OF HIS CAREER AS A RESEARCH SUPERVISOR WITH A LARGE PRIVATE CHEMICAL COMPANY. HE DESCRIBES HIS EXPERIENCES AS HE CONDUCTED RESEARCH ON SILICON COMPOUNDS (SILICON IS THE BASIC COMPONENT OF SAND). AN INDEX IS INCLUDED.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Space for Women: Perspectives on Careers in Science

AUTHOR: None Given

PUBLISHER: Center for Astrophysics, Harvard University,
Radcliffe College, and Smithsonian Institution

COPYRIGHT: None Given

PRICE: Free (46 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This publication can be obtained by writing or calling the Public Affairs Office, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, Massachusetts 02138. Telephone: (617) 495-7461.

DESCRIPTION: Information is provided on choosing and applying for training in space science careers. Included are careers as a mathematician, research assistant, engineer, project administrator, science librarian, science editor, and technical secretary.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: SUBJECT: SCIENCE/OBJECT: CAREER OPPORTUNITIES

AUTHOR: LUCY SMITH

PUBLISHER: TIME SHARE CORP.

COPYRIGHT: 1978 (FILMSTRIP/CASSETTE); 1975 (CARDS)

PRICE: $22.80 (1 FILMSTRIP, 1 CASSETTE)
$58.20 (125 CARDS)

ISBN NUMBER: 0-89466-633-9 (FILMSTRIP/CASSETTE);
0-89466-061-6 (CARDS)

DESCRIPTION: THIS FILMSTRIP AND CASSETTE PACKAGE, ACCOMPANIED BY A SET OF 125 CARDS, IS DESIGNED TO ASSIST THE STUDENT IN LEARNING ABOUT, PLANNING FOR, AND SELECTING A CAREER RELATED TO SCIENCE. THE FILMSTRIP CONTAINS INTERVIEWS WITH A RADIOLOGY TECHNICIAN, A FORESTER, AND AN AIRLINE PILOT. PREPARATION, RESPONSIBILITIES, AND SUGGESTIONS FOR DEVELOPING CAREER AWARENESS ARE PROVIDED. THE CARDS DESCRIBE 125 SCIENCE OR SCIENCE-RELATED CAREERS. INCLUDED ARE DESCRIPTIONS OF THE NATURE OF THE WORK, THE RELATIONSHIP OF THE CAREER TO SCIENCE DUTIES AND RESPONSIBILITIFS, WORKING CONDITIONS, EDUCATIONAL AND PERSONAL QUALIFICATIONS, EARNINGS AND ADVANCEMENT, OUTLOOK, RELATED CAREERS AND SPECIALIZATIONS, AND SOURCES OF ADDITIONAL INFORMATION. EXAMPLES OF SCIENCE CAREERS ARE AGRONOMIST, CHEMIST, DENTAL ASSISTANT, FISH HATCHERY WORKER, GEOPHYSICIST, MEDICAL RECORDS LIBRARIAN, OCEANOGRAPHER, TREE SURGEON, AND ZOOLOGIST.

GRADE: 3-6

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: VETERINARY MEDICINE AND ANIMAL CARE CAREERS

AUTHOR: MARY MCHUGH

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1977

PRICE: $4.47 (65 PAGES)

SBN NUMBER: 0-531-01282-4

DESCRIPTION: PROFESSIONAL AND PARAPROFESSIONAL CAREERS IN VETERINARY MEDICINE, TRAINING REQUIREMENTS, AND JOB OPPORTUNITIES ARE DISCUSSED. THE FOLLOWING ASPECTS OF VETERINARY MEDICINE ARE INCLUDED: ANIMAL CARE TECHNOLOGY, SMALL AND LARGE ANIMAL PRACTICE, RESEARCH, GOVERNMENT EMPLOYMENT, ZOO VETERINARIANS, TEACHING CAREERS, INDUSTRIAL VETERINARIANS, MILITARY VETERINARIANS, CLINIC AIDES, ANIMAL NURSES, OPERATING ROOM AIDES, AND LABORATORY ANIMAL TECHNOLOGISTS. THE APPENDIX INCLUDES A LIST OF COLLEGES OF VETERINARY MEDICINE AND A LIST OF PROGRAMS FOR TRAINING ANIMAL TECHNICIANS. AN INDEX IS INCLUDED.

GRADE: 3

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: What Can She Be? A Veterinarian

AUTHOR: Gloria and Esther Goldreich

PUBLISHER: Lothrop, Lee and Shepard Co.

COPYRIGHT: 1972

PRICE: $4.75 (47 pages)

SBN NUMBER: None Given

DESCRIPTION: Included is an account of a typical day of a veterinarian. Information on a veterinary career is provided. This book might be useful as an introduction to veterinary careers.

GRADE: 3-6

TOPIC: UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: What Does A Geologist Do?

AUTHOR: R. V. Fodor

PUBLISHER: Dodd, Mead, and Co.

COPYRIGHT: 1977

PRICE: $5.25 (62 pages)

SBN NUMBER: 396-074812

DESCRIPTION: This book describes the work of the professional geologist. It presents an introduction to geology, a discussion of oil and mineral exploration, scientific techniques for exploring the earth, and the special fields of geology. The following geological careers are included: volcanologist, sedimentologist, paleontologist, geochronologist, petrologist, mineralogist, geochemist, experimental geologist, geological engineer, geomorphologist, hydrologist, environmental geologist, geophysicist, seismologist, and meteoriticist.

An index is included.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: What is Science? The Biology Series

AUTHOR: Lottie E. Mackay, Series Editor

PUBLISHER: Prentice-Hall Media, Inc.

COPYRIGHT: 1977

PRICE: $98.00 (Four filmstrips and cassettes)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This series is a companion to three others:

What is Science? The Chemistry Series
What is Science? The Earth Science Series
What is Science? The Physics Series

Each of the four series includes four sound filmstrips. The first sound filmstrip is the same for all four series, "Scientists and Their Work." The other three differ according to the subject of the series.

The entire set of four series can be purchased for $299.00 and includes 13 sound filmstrips: "Scientists and Their Work," "What is Biology?," "What is Chemistry?," "What is Earth Science?," "What is Physics?," and eight separate and different "Career Challenges" sound filmstrips.

(PAGE 1 OF 2)

ALL 13 SOUND FILMSTRIPS CAN BE PURCHASED IN OTHER COMBINATIONS. ORDERING INFORMATION IS AVAILABLE FROM PRENTICE-HALL MEDIA, INC., 150 WHITE PLAINS ROAD, TARRYTOWN, NEW YORK 10591.

DESCRIPTION: WHAT IS SCIENCE? THE BIOLOGY SERIES INCLUDES A PROGRAM GUIDE AND FOUR SOUND FILMSTRIPS:

"SCIENTISTS AND THEIR WORK"
"WHAT IS BIOLOGY?"
"CAREER CHALLENGES: HUMAN ECOLOGY"
"CAREER CHALLENGES: CANCER RESEARCH"

THE FILMSTRIP "SCIENTISTS AND THEIR WORK" DISCUSSES SCIENCE FROM A GENERAL POINT OF VIEW AND DESCRIBES THE WORK OF SCIENTISTS. THE FILMSTRIP "WHAT IS BIOLOGY?" PROVIDES A REVIEW OF THE FIELD OF BIOLOGY INCLUDING IMPORTANT HISTORICAL EXPERIMENTS, BIOLOGICAL CONDITIONS BELIEVED SIMILAR TO THE ENVIRONMENT OF THE EARTH WHEN THE FIRST CELLS MIGHT HAVE DEVELOPED, AND THE RELATIONSHIP OF BIOLOGY TO OTHER SCIENCES. THE "CAREER CHALLENGES" FILMSTRIPS DESCRIBE THE WORK OF ACTUAL ENVIRONMENTAL BIOLOGISTS AND CANCER RESEARCHERS.

(PAGE 2 OF 2)

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: CAREER INFORMATION

TITLE: What is Science? The Chemistry Series

AUTHOR: Lottie E. Mackay, Series Editor

PUBLISHER: Prentice-Hall Media, Inc.

COPYRIGHT: 1977

PRICE: $98.00 (Four filmstrips and cassettes)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This series is a companion to three others:

What is Science? The Biology Series
What is Science? The Earth Science Series
What is Science? The Physics Series

Each of the four series includes four sound filmstrips. The first sound filmstrip is the same for all four series, "Scientists and Their Work." The other three differ according to the subject of the series.

The entire set of four series can be purchased for $299.00 and includes 13 sound filmstrips: "Scientists and Their Work," "What is Biology?," "What is Chemistry?," "What is Earth Science?," "What is Physics?," and eight separate and different "Career Challenges" sound filmstrips.

ALL 13 SOUND FILMSTRIPS CAN BE PURCHASED IN OTHER COMBINATIONS. ORDERING INFORMATION IS AVAILABLE FROM PRENTICE-HALL MEDIA, INC., 150 WHITE PLAINS ROAD, TARRYTOWN, NEW YORK 10591.

DESCRIPTION: WHAT IS SCIENCE? THE CHEMISTRY SERIES INCLUDES A PROGRAM GUIDE AND FOUR SOUND FILMSTRIPS:

"SCIENTISTS AND THEIR WORK"
"WHAT IS CHEMISTRY?"
"CAREER CHALLENGES: HERBICIDE RESEARCH"
"CAREER CHALLENGES: WATER PURIFICATION"

THE FILMSTRIP "SCIENTISTS AND THEIR WORK" DISCUSSES SCIENCE FROM A GENERAL POINT OF VIEW AND DESCRIBES THE WORK OF SCIENTISTS. THE FILMSTRIP "WHAT IS CHEMISTRY?" PROVIDES A GENERAL REVIEW OF THE FIELD OF CHEMISTRY (INORGANIC, ORGANIC, ANALYTICAL, PHYSICAL, PETRO, ENVIRONMENTAL, PHARMACEUTICAL, AND INDUSTRIAL) USING EXAMPLES FROM EVERYDAY LIFE AND THE RELATIONSHIP OF CHEMISTRY TO OTHER SCIENTIFIC DISCIPLINES. THE "CAREER CHALLENGES" FILMSTRIPS DESCRIBE THE WORK OF ACTUAL HERBICIDE AND WATER PURIFICATION RESEARCHERS.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: WHAT IS SCIENCE? THE EARTH SCIENCE SERIES

AUTHOR: LOTTIE E. MACKAY, SERIES EDITO

PUBLISHER: PRENTICE-HALL MEDIA, INC.

COPYRIGHT: 1977

PRICE: $98.00 (FOUR FILMSTRIPS AND CASSETTES)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS SERIES IS A COMPANION TO THREE OTHERS:

WHAT IS SCIENCE? THE BIOLOGY SERIES
WHAT IS SCIENCE? THE CHEMISTRY SERIES
WHAT IS SCIENCE? THE PHYSICS SERIES

EACH OF THE FOUR SERIES INCLUDES FOUR SOUND FILMSTRIPS. THE FIRST SOUND FILMSTRIP IS THE SAME FOR ALL FOUR SERIES, "SCIENTISTS AND THEIR WORK." THE OTHER THREE DIFFER ACCORDING TO THE SUBJECT OF THE SERIES.

THE ENTIRE SET OF FOUR SERIES CAN BE PURCHASED FOR $299.00 AND INCLUDES 13 SOUND FILMSTRIPS: "SCIENTISTS AND THEIR WORK," "WHAT IS BIOLOGY?," "WHAT IS CHEMISTRY?," "WHAT IS EARTH SCIENCE?," "WHAT IS PHYSICS?," AND EIGHT SEPARATE AND DIFFERENT "CAREER CHALLENGES" SOUND FILMSTRIPS.

(PAGE 1 OF 2)

ALL 13 SOUND FILMSTRIPS CAN BE PURCHASED IN OTHER COMBINATIONS. ORDERING INFORMATION IS AVAILABLE FROM PRENTICE-HALL MEDIA, INC., 150 WHITE PLAINS ROAD, TARRYTOWN, NEW YORK 10591.

DESCRIPTION: WHAT IS SCIENCE? THE EARTH SCIENCE SERIES INCLUDES A PROGRAM GUIDE AND FOUR SOUND FILMSTRIPS:

"SCIENTISTS AND THEIR WORK"
"WHAT IS EARTH SCIENCE?"
"CAREER CHALLENGES: EARTHQUAKE INVESTIGATORS"
"CAREER CHALLENGES: ASTRONOMY RESEARCH"

THE FILMSTRIP "SCIENTISTS AND THEIR WORK" DISCUSSES SCIENCE FROM A GENERAL POINT OF VIEW AND DESCRIBES THE WORK OF SCIENTISTS. THE FILMSTRIP "WHAT IS EARTH SCIENCE?" PROVIDES A GENERAL REVIEW OF THE FIELD OF EARTH SCIENCE, INCLUDING THE EARTH'S SURFACE, ATMOSPHERE, AND ITS RELATION TO OTHER CELESTIAL BODIES; TOOLS OF EARTH SCIENTISTS; AND HYPOTHESES BEING GENERATED AND TESTED. THE TWO "CAREER CHALLENGES" FILMSTRIPS DESCRIBE THE WORK OF ACTUAL EARTHQUAKE INVESTIGATORS AND ASTRONOMERS.

(PAGE 2 OF 2)

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: CAREER INFORMATION

TITLE: What is Science? The Physics Series

AUTHOR: Lottie E. Mackay, Series Editor

PUBLISHER: Prentice-Hall Media, Inc.

COPYRIGHT: 1977

PRICE: $98.00 (Four filmstrips and cassettes)

SBN NUMBER: None Given

DESCRIPTION: This series is a companion to three others:

What is Science? The Biology Series
What is Science? The Chemistry Series
What is Science? The Earth Science Series

Each of the four series includes four sound filmstrips. The first sound filmstrip is the same for all four series, "Scientists and Their Work." The other three differ according to the subject of the series.

The entire set of four series can be purchased for $299.00 and includes 13 sound filmstrips: "Scientists and Their Work," "What is Biology?," "What is Chemistry?," "What is Earth Science?," "What is Physics?," and eight separate and different "Career Challenges" sound filmstrips.

(PAGE 1 OF 2)

ALL 13 SOUND FILMSTRIPS CAN BE PURCHASED IN OTHER COMBINATIONS. ORDERING INFORMATION IS AVAILABLE FROM PRENTICE-HALL MEDIA, INC., 150 WHITE PLAINS ROAD, TARRYTOWN, NEW YORK 10591.

DESCRIPTION: WHAT IS SCIENCE? THE PHYSICS SERIES INCLUDES A PROGRAM GUIDE AND FOUR SOUND FILMSTRIPS:

"SCIENTISTS AND THEIR WORK"
"WHAT IS PHYSICS?"
"CAREER CHALLENGES: PARTICLE RESEARCH"
"CAREER CHALLENGES: SOLID STATE PHYSICS"

THE FILMSTRIP "SCIENTISTS AND THEIR WORK" DISCUSSES SCIENCE FROM A GENERAL POINT OF VIEW AND DESCRIBES THE WORK OF SCIENTISTS. THE FILMSTRIP "WHAT IS PHYSICS?" PROVIDES A GENERAL REVIEW OF THE FIELD OF PHYSICS INCLUDING EARLY INVESTIGATORS SUCH AS PYTHAGORAS, KEPLER, NEWTON, AND EINSTEIN; APPLICATIONS OF PHYSICS IN EVERYDAY LIFE; AND THE RELATIONSHIP OF PHYSICS TO ALL SCIENTIFIC ENDEAVORS. THE "CAREER CHALLENGES" FILMSTRIPS DESCRIBE THE WORK OF ACTUAL PARTICLE RESEARCHERS AND SOLID STATE PHYSICISTS.

(PAGE 2 OF 2)

GRADE: 5-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: A WILDLIFE CONSERVATION CAREER FOR YOU

AUTHOR: NONE GIVEN

PUBLISHER: THE WILDLIFE SOCIETY

COPYRIGHT: 1975

PRICE: $.25 (11 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: COPIES OF THIS BROCHURE CAN BE OBTAINED FROM THE WILDLIFE SOCIETY, 7101 WISCONSIN AVENUE, NW, NO. 611, WASHINGTON, DC 20014.

DESCRIPTION: CAREERS IN WILDLIFE CONSERVATION ARE DESCRIBED. INCLUDED ARE RELATED OCCUPATIONS IN MANAGEMENT, RESEARCH, PUBLIC RELATIONS, EDUCATION, LAW ENFORCEMENT, CONSULTING, AND ADMINISTRATION. SOURCES OF ADDITIONAL CAREER INFORMATION ARE PROVIDED.

GRADE: 5-8

TOPIC: ENERGY, MATTER

CATEGORY: CAREER INFORMATION

TITLE: Womengineer

AUTHOR: Sara Jane Neustadtl

PUBLISHER: Engineers' Council for Professional Development

COPYRIGHT: 1974

PRICE: $.25 (16 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Engineers' Council for Professional Development, 345 East 47th Street, New York, NY 10017.

DESCRIPTION: The pamphlet encourages female students to enter the various fields of engineering. Included are biographical material about a few women and many quotes from women working in engineering fields. Course requirements, interests and background, and a brief survey of possible fields are provided.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: WOMEN IN SCIENCE

AUTHOR: DINAH L. MOCHÉ (PRODUCER)

PUBLISHER: AMERICAN ASSOCIATION OF PHYSICS TEACHERS

COPYRIGHT: 1975

PRICE: $27.50

SBN NUMBER: NONE GIVEN

DESCRIPTION: THIS MEDIA PACKAGE CONSISTS OF THREE CASSETTE TAPES, TWENTY-NINE 35-MM SLIDES, AND A SCRIPT. THESE MAKE UP SIX SLIDE-TAPE INTERVIEWS WITH WOMEN REGARDING THEIR SCIENCE CAREERS. EACH SCIENTIST SUGGESTS A FEW SOURCES FOR FURTHER INFORMATION.

THE CAREERS REPRESENTED ARE ASTRONOMER, BIOPHYSICIST, ENVIRONMENTAL ENGINEER, NUCLEAR PHYSICIST, SCIENCE ADMINISTRATOR, AND HEAD OF AN ENDOCRINE LABORATORY.

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: WOMEN IN THE FOREST SERVICE

AUTHOR: NONE GIVEN

PUBLISHER: U.S. GOVERNMENT PRINTING OFFICE

COPYRIGHT: 1972

PRICE: $.25 (12 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE OBTAINED FROM THE U.S. GOVERNMENT PRINTING OFFICE, SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D.C. 20402; DOCUMENT NO. 0-521-239.

DESCRIPTION: INCLUDED ARE A DESCRIPTION OF THE U.S. FOREST SERVICE AND ITS WORK, PROFESSIONAL CAREERS IN THE SERVICE, QUALIFICATIONS REQUIRED, BENEFITS, AND SOURCES OF FURTHER INFORMATION. WOMEN ARE DEPICTED IN VARIOUS CAREER FIELDS SUCH AS FORESTRY AND RESEARCH CHEMISTRY.

GRADE: 5-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: Your Career in Ecology

AUTHOR: None Given

PUBLISHER: Ecological Society of America

COPYRIGHT: None Given

PRICE: Free (6 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Single copies of this brochure can be obtained free from Ecological Society of America, Department of Biology, Rutgers University, Camden, NJ 08102.

DESCRIPTION: A variety of careers in ecology are described, including research, teaching, consulting, and administration. The occupational activities and responsibilities of each are discussed, and a general description of ecology is provided. References for additional information are given.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: CAREER INFORMATION

TITLE: *Your Career in Nursing*, rev. ed.

AUTHOR: Mary W. Searight

PUBLISHER: Julian Messner

COPYRIGHT: 1977

PRICE: $7.79 (191 pages)

ISBN NUMBER: 0-671-32922-7

DESCRIPTION: The need for more nurses and the variety of opportunities in nursing are described. Included are the specialties available in the profession, the academic training and personal qualities required, personal case histories as examples of choosing careers, lists of scholarship funds and nursing organizations, and a projection of future work in nursing related to space and deep ocean exploration. Both men and women are portrayed in this profession.

GRADE: 5-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: *Your Career in Parks and Recreation*, REV. ED.

AUTHOR: VIRGINIA AND JOSEPH R. McCALL

PUBLISHER: JULIAN MESSNER

COPYRIGHT: 1974

PRICE: $6.79 (191 PAGES)

SBN NUMBER: 0-671-32688-0

DESCRIPTION: THE RESPONSIBILITIES OF AND NECESSARY TRAINING FOR PARK SERVICE AND OUTDOOR RECREATION CAREERS ARE DESCRIBED. INCLUDED ARE SOURCES OF ADDITIONAL INFORMATION; A LIST OF COLLEGES, UNIVERSITIES, FORESTRY SCHOOLS, AND TWO-YEAR COLLEGES OFFERING PARK AND RECREATIONAL TRAINING PROGRAMS; AN INDEX; AND A LIST OF RECOMMENDED READINGS.

GRADE: 7-8

TOPIC: LIVING THINGS - ENVIRONMENT, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: Your Future in the Science of Oceanography

AUTHOR: Jonathan S. Wood

PUBLISHER: Richards Rosen Press, Inc.

COPYRIGHT: 1979

PRICE: $4.98 (148 pages)

SBN NUMBER: 0-8239-0438-5

DESCRIPTION: The qualifications and education necessary for a career in oceanography, the rewards and disadvantages of such a career, and the diversity of job opportunities are discussed. Suggestions are included on how to get started in an oceanography career. The appendices contain lists of oceanographic and marine science associations, foreign oceanographic institutions, oceanic research agencies and foundations, universities and colleges offering degrees in oceanography, suggested books for reading, and a bibliography.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: CAREER INFORMATION

TITLE: YOUR FUTURE IN TECHNICAL AND SCIENCE WRITING, REV. ED.

AUTHOR: EMERSON CLARKE AND VERNON ROOT

PUBLISHER: ARCO PUBLISHING CO.

COPYRIGHT: 1972

PRICE: $2.95 (162 PAGES, PAPER)

SBN NUMBER: 0-668-03914-0

DESCRIPTION: THIS MIGHT BE A UNIQUE REFERENCE ON CAREERS IN TECHNICAL AND SCIENCE WRITING. INCLUDED ARE THE SKILLS, EDUCATION, AND TRAINING REQUIRED; OPPORTUNITIES AND DISADVANTAGES OF WRITING CAREERS; POSSIBLE PERSONAL SATISFACTION; AND EXPECTED EARNINGS OF TECHNICAL AND SCIENCE WRITERS. DIVERSE WRITING CAREERS ARE DESCRIBED IN MANY FIELDS SUCH AS AGRICULTURE, MEDICINE, GOVERNMENT, TECHNICAL ADVERTISING, NEWSPAPERS, SCIENCE AND SCIENCE FICTION BOOK COMPANIES, AND ENGINEERING. TYPICAL COLLEGE COURSES OF STUDY ARE GIVEN AND THERE ARE SAMPLES OF COLLEGE EXTENSION, COMPANY, AND ASSOCIATION TRAINING PROGRAMS. FIFTEEN PROFESSIONAL WRITING ASSOCIATIONS ARE IDENTIFIED AS WELL AS MANY SCIENTIFIC AND TECHNICAL ORGANIZATIONS THAT SUPPORT TECHNICAL AND SCIENCE WRITERS. A BIBLIOGRAPHY AND INDEX ARE INCLUDED.

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: CAREER INFORMATION

TITLE: ZOOLOGY CAREERS

AUTHOR: ROBERT E. DUNBAR

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1977

PRICE: $4.95 (64 PAGES)

SBN NUMBER: 0-5310-1312-X

DESCRIPTION: THIS BOOK DISCUSSES THE EDUCATION AND TRAINING REQUIREMENTS FOR VARIOUS CAREERS IN THE FIELD OF ZOOLOGY AND THE JOB OPPORTUNITIES IN PRIVATE AND PUBLIC INSTITUTIONS. SOME EXAMPLES ARE UNIVERSITY OR MEDICAL RESEARCH, ORNITHOLOGIST, PARASITOLOGIST, PARK NATURALIST, ICHTHYOLOGIST, AND MARINE BIOLOGIST. A CHAPTER IS INCLUDED WHICH PRESENTS SALARY RANGES OF VARIOUS OCCUPATIONS; FOUR-YEAR COLLEGES AND UNIVERSITIES WITH TOP-RANKING DEPARTMENTS IN BIOLOGICAL SCIENCES; PROGRAM TITLES OFFERED BY JUNIOR COLLEGES, TECHNICAL SCHOOLS, AND VOCATIONAL SCHOOLS; AND AREAS OF GREATEST DEMAND FOR ZOOLOGISTS.

AN INDEX IS INCLUDED.

Montgomery County Public Schools

GIFTED SCIENCE PROJECT
Department of Instructional Planning and Development
850 Hungerford Drive Rockville, Maryland 20850
Telephone (301) 279-3500

PROJECT IDEAS BIBLIOGRAPHY

The attached bibliography was compiled by the Montgomery County Public Schools (MCPS) Gifted Science Project (GSP), ESEA Title IV-C, Grantor Project Number 30-77-3-16-0039. The project's purpose was to identify science resources for individual gifted students in Grades 3-8.

This bibliography provides information about published materials individual students can use to complete a science project. These materials are intended for use in independent studies or in conjunction with a resource person. A special effort was made by the GSP staff to include information published after 1977, although there are, no doubt, additional materials available.

This bibliography does not include standard science content materials (e.g., organic chemistry or cellular biology) but instead is limited to publications that provide students with information, directions, and guidance about conducting individual science projects.

Because these materials are intended for use by gifted students, grade level classifications have not been assigned using standard readability formulas. Prior to constructing this bibliography, the GSP staff was not able to identify a practical set of criteria for determining grade level classifications for gifted students. Thus, the GSP staff used the following subjective criteria for assigning grade level classifications:

1. The relationship of the materials to the MCPS *Program of Studies.*
2. The complexity of concepts presented in the materials (e.g., analysis, synthesis).
3. The appearance of the materials.
4. The apparent readability of the materials.
5. The materials' potential for motivating scientific investigation.

The topic that appears at the top of each selection relates to the MCPS *Program of Studies* (Energy, Lab Skills - Nature of Science, Living Things, Living Things - Environment, Matter, and Universe in Change).

This bibliography is the second of three bibliographies originally disseminated on microfiche for use by teachers. Thus, pagination of this bibliography does not begin with page 1. The first bibliography, which provides information about science-related careers covers pages 1 to 98. This bibliography begins with page 99 and ends on page 286. The third bibliography includes publications that help students develop skills in the processes of science and covers pages 287 to 336.

NOTE: The following list identifies page numbers of titles in this bibliography which also appear in the *Science Processes Bibliography.*

Page in *Project Ideas Bibliography*	Page in *Science Processes Bibliography*
159	291
169	296
175	298
177	305
199	310
200	311
219	317
241 - 242	320 - 321
263 - 264	328 - 329
278	332
279 - 280	333 - 334

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GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: ABSTRACTS: 30TH INTERNATIONAL SCIENCE AND ENGINEERING FAIR

AUTHOR: NONE GIVEN

PUBLISHER: SCIENCE SERVICE

COPYRIGHT: 1979

PRICE: $2.50 (229 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS BOOK CAN BE OBTAINED FROM SCIENCE SERVICE, 1719 N STREET, NW, WASHINGTON, D. C. 20036. IT IS AN ANNUAL PUBLICATION, AND EACH ISSUE FOLLOWS THE CURRENT INTERNATIONAL SCIENCE AND ENGINEERING FAIR.

DESCRIPTION: DESCRIPTIONS OF MORE THAN 400 SCIENCE PROJECTS PRESENTED AT THE 1979 INTERNATIONAL SCIENCE AND ENGINEERING FAIR ARE PROVIDED. CATEGORIES REPRESENTED ARE THE BEHAVIORAL AND SOCIAL SCIENCES, BIOCHEMISTRY, BOTANY, CHEMISTRY, EARTH AND SPACE SCIENCES, ENGINEERING, MATHEMATICS AND COMPUTERS, MEDICINE AND HEALTH, MICROBIOLOGY, PHYSICS, AND ZOOLOGY.

GRADE: 5-8

TOPIC: ENERGY, MATTER

CATEGORY: PROJECT IDEAS

TITLE: ADVENTURES IN ELECTROCHEMISTRY

AUTHOR: ALFRED MORGAN

PUBLISHER: CHARLES SCRIBNER'S SONS

COPYRIGHT: 1977

PRICE: $2.95 (275 PAGES, PAPER)

SBN NUMBER: 0-684-14754-8

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: ELECTROCHEMICAL PROCESSES USE ELECTRICAL ENERGY TO FACILITATE CHEMICAL PROCESSES AND CHANGES. FORTY INVESTIGATIONS ARE DESCRIBED, AND DIRECTIONS ARE GIVEN FOR CONSTRUCTING THE REQUIRED APPARATUS. TOPICS COVERED INCLUDE ELECTRIC CURRENT FROM CHEMICALS, STORAGE CELLS, ELECTROLYSIS, RECTIFIERS, ELECTROPLATING, PHOTOELECTRICITY, RUSTING AND CORROSION, AND ELECTROCHEMICAL TELEGRAPHY.

GRADE: 5-6

TOPIC: LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: Adventures with a Hand Lens

AUTHOR: Richard Headstrom

PUBLISHER: Dover Publications

COPYRIGHT: 1962

PRICE: $2.50 (220 pages, paper)

SBN NUMBER: 486-23330-8

DESCRIPTION: Fifty investigations with a hand lens (magnifying glass) are described. Each investigation is illustrated and includes a discussion.

Two investigations are on crystals and the others focus on a wide variety of plants or animals.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Adventures with a Microscope

AUTHOR: Richard Headstrom

PUBLISHER: Dover Publications

COPYRIGHT: 1941

PRICE: $2.75 (232 pages, paper)

SBN NUMBER: 0-486-23471-1

SPECIAL INSTRUCTIONS: Although this book's writing style seems dated, it contains a large number of projects that are not affected by the publication date.

Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: A number of projects to perform with a microscope are described. Most of the materials used are commonly available in the yard or home and include microscopic animals found in water, small insects, plants, fabrics, and food. Some dissection is required. Many line drawings are included.

GRADE: 6-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: The Amateur Astronomer's Handbock, rev. ed.

AUTHOR: James Muirden

PUBLISHER: Thomas Y. Crowell

COPYRIGHT: 1974

PRICE: $8.95 (404 pages)

SBN NUMBER: 0-690-00505-9

DESCRIPTION: This book contains four parts. The first part provides guidelines for establishing and maintaining an amateur observatory and suggestions for keeping records. The second and third parts discuss viewing the moon, sun, planets, comets, meteors, stars, nebulae, and galaxies with a low- to medium-power telescope. Astrophotography is also discussed. The fourth part describes grinding, polishing, and testing the accuracy of a homemade telescope mirror.

The handbook features a glossary, a bibliography, tables on future solar and lunar eclipses and planetary positions, lists of amateur astronomical societies, and an index.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Boomerangs! How to Make Them and Also How They Fly;" "The Amateur Scientist: More on Boomerangs, Including Their Connection With the Dimpled Golf Ball." Scientific American, Vol. 240, No. 3, March 1979, pp. 162-172 and Vol. 240, No. 4, April 1979, pp. 180-188.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1979

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of these back issues are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for a student. The reading level and concepts are advanced. Additional teacher preparation might be necessary.

DESCRIPTION: The plans and procedures for constructing boomerangs, the basic aerodynamic principles involved, and instructions for flying them are presented in the March issue. Information on the Annual Smithsonian Open Boomerang Tournament is included.

The April issue extends the aerodynamic principles presented in the March issue by comparing the air flow around a dimpled golf ball with that around a boomerang.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: The Bright Colors in a Soap Film are a Lesson in Wave Interference." *Scientific American*, Vol. 239, No. 3, September 1978, pp. 232-240.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1978

PRICE:

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: A back issue of this journal is not available from Scientific American, Inc. However, it is readily available in local libraries.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation may be necessary.

DESCRIPTION: The rainbow colors reflected from a soap film are discussed. Explanations of the phenomenon, suggestions for preparing and purchasing soap solutions, and descriptions of related activities for the student are included.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "THE AMATEUR SCIENTIST: DELIGHTS OF FORMING WATER INTO SHEETS AND BELLS WITH KNIVES, SPOONS, AND OTHER OBJECTS." SCIENTIFIC AMERICAN, VOL. 241, NO. 2, AUGUST, 1979, PP. 188-196, 198.

AUTHOR: JEARL WALKER

PUBLISHER: SCIENTIFIC AMERICAN, INC.

COPYRIGHT: 1979

PRICE: $2.50 (BACK ISSUE PRICE)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: LIMITED NUMBERS OF THIS BACK ISSUE ARE AVAILABLE FROM SCIENTIFIC AMERICAN, INC., 415 MADISON AVENUE, NEW YORK, NY 10017. ADDRESS ORDER TO THE ATTENTION OF MRS. S. PAUL.

THE TEACHER SHOULD EXERCISE CAUTION WHEN SUGGESTING THIS RESOURCE FOR A STUDENT. THE READING LEVEL AND CONCEPTS ARE ADVANCED. ADDITIONAL TEACHER PREPARATION MIGHT BE NECESSARY.

DESCRIPTION: THE PHENOMENON OF CREATING WATER SPRAYS BY PLACING OBJECTS IN THE PATHS OF STREAMS OF WATER IS DISCUSSED. INVESTIGATIONS ARE DESCRIBED FOR THE STUDENT TO CONDUCT. NECESSARY MATERIALS INCLUDE SPOONS, KNIVES, BOTTLE CAPS, WATCH-GLASSES, AND A WATER STREAM SOURCE SUCH AS A KITCHEN FAUCET. BACKGROUND INFORMATION AND EXPLANATIONS ARE PROVIDED.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Drops of Liquid Can be Made to Float on the Liquid. What Enables Them To Do So?" Scientific American, Vol. 238, No. 6, June 1978, pp. 151-158.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1978

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation may be necessary. It is recommended that the activities described be conducted under the supervision of an adult.

DESCRIPTION: This article deals with the phenomenon of drops of liquid floating temporarily on the surface of the same liquid. Underlying principles are discussed. Suggestions are given for carrying out investigations using an audio oscillator and loudspeaker and household materials such as dyed vinegar and corn oil.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: "THE AMATEUR SCIENTIST: EXPERIMENTS WITH EDWIN LAND'S METHOD OF GETTING COLOR OUT OF BLACK AND WHITE." SCIENTIFIC AMERICAN, VOL. 240, NO. 6, JUNE 1979, PP. 189-200.

AUTHOR: JEARL WALKER

PUBLISHER: SCIENTIFIC AMERICAN, INC.

COPYRIGHT: 1979

PRICE: $2.50 (BACK ISSUE PRICE)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: LIMITED NUMBERS OF THIS BACK ISSUE ARE AVAILABLE FROM SCIENTIFIC AMERICAN, INC., 415 MADISON AVENUE, NEW YORK, NY 10017. ADDRESS ORDER TO THE ATTENTION OF MRS. S. PAUL.

THE TEACHER SHOULD EXERCISE CAUTION WHEN SUGGESTING THIS RESOURCE FOR THE STUDENT. THE READING LEVEL AND CONCEPTS ARE ADVANCED. ADDITIONAL TEACHER PREPARATION MIGHT BE NECESSARY.

DESCRIPTION: INVESTIGATIONS ARE DESCRIBED WHICH USE EDWIN LAND'S METHOD OF GETTING COLOR OUT OF BLACK-AND-WHITE FILM.

THE INVESTIGATIONS REQUIRE A SINGLE-REFLEX CAMERA, BLACK-AND-WHITE FILM, LENS FILTERS, A COPY STAND, AND A LIGHT SOURCE.

GRADE: 6-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "THE AMATEUR SCIENTIST: HOT WATER FREEZES FASTER THAN COLD WATER. WHY DOES IT DO SO?" SCIENTIFIC AMERICAN, VOL. 237, NO. 3, SEPTEMBER 1977, PP. 246-257.

AUTHOR: JEARL WALKER

PUBLISHER: SCIENTIFIC AMERICAN, INC.

COPYRIGHT: 1977

PRICE:

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: A BACK ISSUE OF THIS JOURNAL IS NOT AVAILABLE FROM SCIENTIFIC AMERICAN, INC. HOWEVER, IT IS READILY AVAILABLE IN LOCAL LIBRARIES.

THE TEACHER SHOULD EXERCISE CAUTION WHEN SUGGESTING THIS RESOURCE FOR STUDENT USE. THE READING LEVEL AND CONCEPTS ARE ADVANCED. ADDITIONAL TEACHER PREPARATION MIGHT BE NECESSARY.

DESCRIPTION: THE ARTICLE DEALS WITH THE EFFECT OF TEMPERATURE ON THE FREEZING RATE OF WATER. SUGGESTIONS ARE GIVEN FOR CONDUCTING THE INVESTIGATIONS, AND THEORIES ARE PRESENTED WHICH EXPLAIN THE PHENOMENON.

GRADE: 7-8

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: How an Amateur Can Construct a Model of an Enzyme Molecule at Modest Cost." Scientific American, Vol. 234, No. 1, January 1976, pp. 124-128.

AUTHOR: C. L. Stong

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1976

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation might be necessary.

The student should have a general knowledge of molecular structure and chemical bonding.

DESCRIPTION: The construction of a modestly priced model of an enzyme molecule, including peptide and polypeptide bonds, is described. The methods can be applied to the construction of a biological molecule if the atomic structure is known.

Suggestions for locating commercial suppliers of components are listed.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: How to Build a Simple Seismograph to Record Earthquake Waves at Home." Scientific American, Vol. 241, No. 1, July 1979, pp. 152-161.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1979

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for a student. The reading level and concepts are advanced. Additional teacher preparation might be necessary.

DESCRIPTION: Plans are provided for constructing a simple seismograph to record earthquake waves at home. Suggestions are included for setting up the seismograph, noting the physical principles of earth movements, and interpreting seismic waves.

(PAGE 1 OF 2)

THE PLANS FOR THE SEISMOGRAPH WERE PROVIDED BY JAMES D. LEHMAN OF JAMES MADISON UNIVERSITY, WHO WILL ANSWER QUESTIONS ON ITS CONSTRUCTION OR OPERATION. HE IS ALSO PARTICULARLY INTERESTED IN EXCHANGING SEISMIC RECORDS. HIS ADDRESS IS PROVIDED ON PAGE 161 OF THE ARTICLE.

(PAGE 2 OF 2)

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: How to Create and Observe a Dozen Rainbows in a Single Drop of Water." Scientific American, Vol. 237, No. 1, July 1977, pp. 138-144.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1977

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation might be necessary.

DESCRIPTION: General information is given on how to create and observe rainbows in a laboratory. Suggestions are provided for conducting investigations. Explanations of the phenomenon of multiple rainbows are discussed.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: "THE AMATEUR SCIENTIST: HOW TO MEASURE THE SIZE OF THE EARTH WITH ONLY A FOOT RULE OR A STOPWATCH." SCIENTIFIC AMERICAN, VOL. 240, NO. 5, MAY 1979, PP. 172-182.

AUTHOR: JEARL WALKER

PUBLISHER: SCIENTIFIC AMERICAN, INC.

COPYRIGHT: 1979

PRICE: $2.50 (BACK ISSUE PRICE)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: LIMITED NUMBERS OF THIS BACK ISSUE ARE AVAILABLE FROM SCIENTIFIC AMERICAN, INC., 415 MADISON AVENUE, NEW YORK, NY 10017. ADDRESS ORDER TO THE ATTENTION OF MRS. S. PAUL.

THE TEACHER SHOULD EXERCISE CAUTION WHEN SUGGESTING THIS RESOURCE FOR A STUDENT. THE READING LEVEL AND CONCEPTS ARE ADVANCED. ADDITIONAL TEACHER PREPARATION MAY BE NECESSARY.

THE INVESTIGATIONS DESCRIBED MUST BE PERFORMED AT AN OCEAN BEACH.

DESCRIPTION: INCLUDED ARE TWO PROCEDURES FOR CALCULATING THE SIZE OF THE EARTH WITH A FOOT RULE OR A STOPWATCH. THE REFERRENT IS THE OCEAN HORIZON. THE MATHEMATICS ASSOCIATED WITH EACH PROCEDURE IS EXPLAINED.

GRADE: 6-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Introducing the Musha, The Double Lozenge, and a Number of Other Kites to Build and Fly." Scientific American, Vol. 238, No. 2, February 1978, pp. 156-161.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1978

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation might be necessary.

DESCRIPTION: A discussion of kite aerodynamics and construction is presented. Related information, tips for selecting materials, flying techniques, and construction procedures are also described.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: The Mysterious 'Rattleback': A Stone That Spins in One Direction and Then Reverses," Scientific American, Vol. 241, No. 4, October 1979, pp. 172-184, 186.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1979

PRICE: $2.50 (back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

DESCRIPTION: The spinning properties of a certain shape of stone, here called a rattleback, are described. A rattleback is biased to spin in one direction. If spun in reverse, it quickly stops, rattles up and down for a few seconds, then spins in the opposite direction. A discussion of the phenomenon, suggestions for making rattlebacks, and descriptions of related activities are included.

GRADE: 7-8

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: "THE AMATEUR SCIENTIST: THE PHYSICS AND CHEMISTRY UNDERLYING THE INFINITE CHARM OF A CANDLE FLAME." SCIENTIFIC AMERICAN, VOL. 238, NO. 4, APRIL 1978, PP. 154-162.

AUTHOR: JEARL WALKER

PUBLISHER: SCIENTIFIC AMERICAN, INC.

COPYRIGHT: 1978

PRICE: $2.50 (BACK ISSUE PRICE)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: LIMITED NUMBERS OF THIS BACK ISSUE ARE AVAILABLE FROM SCIENTIFIC AMERICAN, INC., 415 MADISON AVENUE, NEW YORK NY 10017. ADDRESS ORDER TO THE ATTENTION OF MRS. S. PAUL.

THE TEACHER SHOULD EXERCISE CAUTION WHEN SUGGESTING THIS RESOURCE FOR STUDENT USE. THE READING LEVEL AND CONCEPTS ARE ADVANCED. ADDITIONAL TEACHER PREPARATION MIGHT BE NECESSARY. IT IS RECOMMENDED THAT THE ACTIVITIES DESCRIBED BE CONDUCTED UNDER THE SUPERVISION OF A QUALIFIED ADULT.

DESCRIPTION: THIS ARTICLE DEALS WITH BURNING CANDLES AND THE ASSOCIATED SCIENTIFIC PRINCIPLES. SUGGESTIONS ARE GIVEN FOR CARRYING OUT INVESTIGATIONS, AND THEORIES ARE PRESENTED WHICH EXPLAIN THE PHENOMENON.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: A Radiation Detector Made Out of Aluminum Foil and a Tin Can," Scientific American, Vol. 241, No. 3, September 1979 , pp. 234-246, 250.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1979

PRICE: $2.50 (back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

DESCRIPTION: This article discusses measurement of gamma rays and other ionizing radiation. Plans and procedures for constructing a Kearny meter, which works on the principle of an electroscope, are given. Required materials are ordinarily available in any household. The meter may be used to determine how much radiation (in roentgens/hr) is being absorbed. A conversion chart is also included.

GRADE: 7-8

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: "THE AMATEUR SCIENTIST: THE SALT FOUNTAIN AND OTHER CURIOSITIES BASED ON THE DIFFERENT DENSITY OF FLUIDS." SCIENTIFIC AMERICAN, VOL. 237, NO. 4, OCTOBER 1977, PP. 142-150.

AUTHOR: JEARL WALKER

PUBLISHER: SCIENTIFIC AMERICAN, INC.

COPYRIGHT: 1977

PRICE: $2.50 (BACK ISSUE PRICE)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: LIMITED NUMBERS OF THIS BACK ISSUE ARE AVAILABLE FROM SCIENTIFIC AMERICAN, INC.,415 MADISON AVENUE, NEW YORK, NY 10017. ADDRESS ORDER TO THE ATTENTION OF MRS. S. PAUL.

THE TEACHER SHOULD EXERICSE CAUTION WHEN SUGGESTING THIS RESOURCE FOR STUDENT USE. THE READING LEVEL AND CONCEPTS ARE ADVANCED. ADDITIONAL TEACHER PREPARATION MIGHT BE NECESSARY.

DESCRIPTION: EXPERIMENTS ARE DESCRIBED WHICH ARE BASED ON THE DIFFERENT DENSITIES OF SALT WATER AND FRESH WATER. OTHER INVESTIGATIONS INCLUDE THE BASIC SALT OSCILLATOR, FRESH WATER MOVEMENT IN SALT WATER, THE INVERTED-GLASS TRICK, AND DENSITY PROFILES WHEN SALT WATER OVERLIES COLD FRESH WATER.

GRADE: 7-8

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Serious Fun with Polyox, Silly Putty, Slime, and Other Non-Newtonian Fluids." Scientific American, Vol. 239, No. 5, November 1978, pp. 186-196.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1978

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation may be necessary. It is recommended that the activities described be conducted under the supervision of an adult.

DESCRIPTION: Viscosity -- the resistance of fluid to flow -- is discussed and related to a variety of liquids. The article emphasizes that the application of pressure to certain substances causes a change in viscosity. Several demonstrations are

DESCRIBED AND THE UNDERLYING PRINCIPLES ARE EXPANDED. TECHNIQUES, PROCEDURES, NECESSARY MATERIALS, REFERENCES, AND SOME SOURCES ARE GIVEN. MATERIALS FOR VARIOUS DEMONSTRATIONS INCLUDE "SILLY PUTTY," "SLIME," CATSUP, SAND, CORNSTARCH, CONDENSED SOUP, AND OTHER SUBSTANCES MORE TECHNICAL OR CHEMICAL IN NATURE.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Studying Polarized Light with Quarter-Wave and Half-Wave Plates of One's Own Making"; "The Amateur Scientist: More About Polarizers and How to Use Them, Particularly for Studying Polarized Sky Light." Scientific American, Vol. 237, No. 6, December 1977, pp. 172-180 and Vol. 238, No. 1, January 1978, pp. 132-136.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1978

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of these back issues are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

Both issues of the journal are necessary, as the two-part article begins in the December issue and concludes in the January issue.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation may be necessary.

(PAGE 1 OF 2)

DESCRIPTION: THE DECEMBER ARTICLE DISCUSSES POLARIZED LIGHT AND DESCRIBES THE CONSTRUCTION OF HOMEMADE DEVICES FOR STUDYING CHARACTERISTICS OF THIS KIND OF LIGHT. THE JANUARY ARTICLE EXTENDS THE INFORMATION PROVIDED IN THE PREVIOUS ISSUE AND DISCUSSES THE USE OF POLARIZERS, ESPECIALLY AS THEY RELATE TO THE STUDY OF SKY LIGHT.

GRADE: 7-8

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Thin-Layer Chromatography." Scientific American, Vol. 234, No. 2, February 1976, pp. 128-133.

AUTHOR: C.L. Stong

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1976

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation might be necessary.

DESCRIPTION: Thin-layer chromatography is described. This is a technique for separating parts of solutions and mixtures that are very much alike. Instructions are provided for building the necessary apparatus.

GRADE: 7-8

TOPIC: ENERGY, LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Visual Illusions That Can Be Achieved By Putting a Dark Filter Over One Eye." Scientific American, Vol. 238, No. 1, March 1978, pp. 142-153.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1978

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional teacher preparation might be necessary. It is recommended that the activities described be conducted under the supervision of a qualified adult.

DESCRIPTION: This article describes the Pulfrich optical illusion, first suggested by a physicist who was blind in one eye. Instructions are given for building an apparatus used to measure electrical impulses associated with elliptical path illusion. Vendors of the necessary materials are listed.

GRADE: 6-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: "The Amateur Scientist: Wonders of Physics That Can Be Found In A Cup of Coffee or Tea." Scientific American, Vol. 237, No. 5, November 1977, pp. 152-160.

AUTHOR: Jearl Walker

PUBLISHER: Scientific American, Inc.

COPYRIGHT: 1977

PRICE: $2.50 (Back issue price)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Limited numbers of this back issue are available from Scientific American, Inc., 415 Madison Avenue, New York, NY 10017. Address order to the attention of Mrs. S. Paul.

The teacher should exercise caution when suggesting this resource for student use. The reading level and concepts are advanced. Additional preparation might be necessary.

DESCRIPTION: A cup of tea or coffee and the stirring process are used to illustrate properties of sound, liquids, light, and heat.

Other investigations are suggested.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: ANIMAL BEHAVIOR IN LABORATORY AND FIELD (SECOND EDITION)

AUTHOR: EDWARD O. PRICE AND ALLEN W. STOKES, EDITORS

PUBLISHER: W.H. FREEMAN AND CO.

COPYRIGHT: 1975

PRICE: $7.00 (130 PAGES)

SBN NUMBER: 0-7167-0762-4

SPECIAL INSTRUCTIONS: SOME ACTIVITIES COULD RESULT IN THE INHUMANE TREATMENT OF ANIMALS AND ARE NOT RECOMMENDED. ANY ACTIVITY INVOLVING PAIN OR DISCOMFORT THAT IS NOT A PART OF THE ANIMAL'S NATURAL ENVIRONMENT OR RESULTS IN THE DEATH OF THE ANIMAL SHOULD NOT BE DONE.

DESCRIPTION: THE TECHNIQUES OF STUDYING ANIMAL BEHAVIOR ARE PRESENTED. THIRTY-THREE LABORATORY AND FIELD INVESTIGATIONS ON ANIMAL BEHAVIOR ARE DESCRIBED. REFERENCES AND SUGGESTIONS FOR ADDITIONAL STUDY ARE INCLUDED AT THE CONCLUSION OF EACH CHAPTER. ANIMALS INCLUDE INVERTEBRATES SUCH AS INSECTS, EARTHWORMS, AND PLANARIA AND VERTEBRATES SUCH AS BIRDS, MICE, AND FISH.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: ANIMAL CARE FROM PROTOZOA TO SMALL MAMMALS

AUTHOR: F. BARBARA ORLANS

PUBLISHER: ADDISON-WESLEY PUBLISHING CO.

COPYRIGHT: 1977

PRICE: $10.50 (374 PAGES, PAPER)

SBN NUMBER: 201-05484-1

DESCRIPTION: INFORMATION IS PROVIDED ON OBTAINING AND CARING FOR A VARIETY OF LIVE ANIMALS SUCH AS MICROSCOPIC FORMS, WORMS, CRUSTACEANS, INSECTS, FISH, AMPHIBIANS, REPTILES, AND MAMMALS. CULTURE TECHNIQUES INCLUDE HOUSING, FEEDING AND REARING YOUNG. EMPHASIS IS PLACED ON THEIR HUMANE TREATMENT. INVESTIGATIONS ARE DESCRIBED FOR ALL THE ANIMALS, AND EACH SECTION CONTAINS A LIST OF REFERENCES.

U.S. AND CANADIAN REGULATIONS GOVERNING THE USE OF ANIMALS AND A BIBLIOGRAPHY OF TEXTS THAT DESCRIBE HUMANE EXPERIMENTS ARE INCLUDED.

THE MAILING ADDRESSES OF ANIMAL SUPPLIERS AND STATE WILDLIFE AGENCIES ARE PROVIDED.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: ASTRONOMY WITH BINOCULARS

AUTHOR: JAMES MUIRDEN

PUBLISHER: THOMAS Y. CROWELL

COPYRIGHT: 1963

PRICE: $8.95 (156 PAGES)

SBN NUMBER: 0-690-01723-5

SPECIAL INSTRUCTIONS: THE SUGGESTION ON PAGES 10 AND 11 FOR DIRECT OBSERVATION OF THE SUN BY USING A DENSE FILTER ON BINOCULARS IS NOT RECOMMENDED. THIS PRACTICE COULD RESULT IN PERMANENT EYE DAMAGE DUE TO CARELESSNESS OR ACCIDENTAL ABUSE OF THE TECHNIQUE.

DESCRIPTION: THE OBSERVATION OF CELESTIAL BODIES USING BINOCULARS IS DESCRIBED. INFORMATION ON BINOCULAR OPTICS AND TIPS FOR PURCHASING BINOCULARS ARE PROVIDED. BINOCULAR USE IS DESCRIBED FOR VIEWING THE SUN, MOON, AND PLANETS; COMETS, METEORS, AND AURORAE; AND STARS. STUDENT PROJECTS ARE DISCUSSED AND SUGGESTIONS FOR OBSERVING THE CONSTELLATIONS ARE PROVIDED. THE APPENDIXES CONTAIN INFORMATION ON ASTRONOMICAL SOCIETIES AND LISTS OF PUBLICATIONS. AN INDEX IS INCLUDED.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Bathtub Physics

AUTHOR: Hy Ruchlis

PUBLISHER: Harcourt Brace Jovanovich

COPYRIGHT: 1967

PRICE: $5.00 (122 pages)

SBN NUMBER: None Given

DESCRIPTION: Physics investigations which can be conducted in a bathtub are described. Topics include magnetism, surface tension, volume and weight relationships, waves, sounds, light beams, heat, forces and motion, and air and water pressure.

GRADE: 7-8

TOPIC: LIVING THINGS, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Beginning Biochemistry: A Simplified Guide to the Chemistry of Life

AUTHOR: William Berman

PUBLISHER: Sentinel Books Publishers

COPYRIGHT: 1968

PRICE: $2.95 (157 pages, paper)

SBN NUMBER: 0-668-03235-9

SPECIAL INSTRUCTIONS: Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: Included are explanations and detailed illustrations of the following: structure and behavior of molecules of water, minerals, proteins, fats, and carbohydrates; biochemical agents; and bonding in molecules. Suggestions for investigations, with step-by-step laboratory techniques, are provided. There is an index.

Grade: 3-6

Topic: LIVING THINGS, LIVING THINGS - ENVIRONMENT

Category: PROJECT IDEAS

Title: Biology Experiments for Children

Author: Ethel Hanauer

Publisher: Dover Publications

Copyright: 1962

Price: $1.25 (95 pages, paper)

SBN Number: 486-22032-X

Description: Biology investigations and underlying principles are presented. The following topics are included: microscope skills, observation of plants and animals and their anatomy, and studies of the human organism. Several activities require the use of a microscope.

An index is included.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: BIOLOGY PROJECT CARDS

AUTHOR: DR. MICHAEL F. FLEMING

PUBLISHER: THE CENTER FOR APPLIED RESEARCH IN EDUCATION

COPYRIGHT: 1978

PRICE: $7.95 (25 CARDS AND A TEACHER'S GUIDE)

SBN NUMBER: 0-87628-658-9

SPECIAL INSTRUCTIONS: THIS SET OF PROJECT CARDS IS PART OF A SERIES THAT INCLUDES SETS WITH THE FOLLOWING TITLES: BIOLOGY PROJECT CARDS, CHEMISTRY PROJECT CARDS, EARTH SCIENCE PROJECT CARDS, ENVIRONMENTAL SCIENCE PROJECT CARDS, MARINE SCIENCE PROJECT CARDS, PHYSICS PROJECT CARDS, AND PSYCHOLOGY PROJECT CARDS.

THE TEACHER'S GUIDE FOR EACH SET DESCRIBES THE INDIVIDUAL UNIT, LISTS NECESSARY MATERIALS, SUGGESTS SPECIFIC PROCEDURES, DISCUSSES SAFETY PRECAUTIONS, PROVIDES ANSWERS, AND SUGGESTS AREAS FOR REVIEW AND FURTHER STUDY.

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

(PAGE 1 OF 2)

DESCRIPTION: EACH ACTIVITY CARD, APPROXIMATELY 15 CM X 23 CM, IS ON A SINGLE CONCEPT AND PROVIDES QUESTIONS FOR INQUIRY, LISTS OF MATERIALS, PROCEDURES, IDEAS FOR PRESENTING RESULTS, AND SUGGESTIONS FOR FURTHER STUDY.

THE ACTIVITIES IN THIS SET INCLUDE CALORIES, PLANT MOVEMENTS, A DNA MODEL, BIOFEEDBACK, PHOTOMICROGRAPHY, STOMATA PATTERNS OF LEAVES, GROWING AND OBSERVING MOLDS, BIORHYTHM CYCLES, ESP, TESTING FOR AN EFFECTIVE MOUTHWASH, AND LEARNING BEHAVIOR.

(PAGE 2 OF 2)

GRADE: 5-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: BUILDING: THE FIGHT AGAINST GRAVITY

AUTHOR: MARIO SALVADORI

PUBLISHER: ATHENEUM

COPYRIGHT: 1979

PRICE: $10.95 (152 PAGES)

SBN NUMBER: 0-689-50144-7

DESCRIPTION: BASIC ENGINEERING PRINCIPLES SUCH AS THRUST, TENSION, ELASTICITY, AND DYNAMIC FORCE ARE DISCUSSED AND ILLUSTRATED WITH DEMONSTRATIONS AND PICTURES OF MODELS. SUGGESTIONS ARE GIVEN FOR BUILDING STRUCTURES THAT EXEMPLIFY THE CONCEPTS DESCRIBED. PROJECTS INCLUDE A WIDE VARIETY OF STRUCTURED SUPPORTS, BRIDGES, AND BUILDINGS. THE BOOK IS WELL ILLUSTRATED WITH LINE DRAWINGS, AND AN INDEX IS PROVIDED.

GRADE: 3-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: CARE OF UNCOMMON PETS

AUTHOR: WILLIAM J. WEBER, D.V.M.

PUBLISHER: HOLT, RINEHART AND WINSTON

COPYRIGHT: 1979

PRICE: $7.95 (222 PAGES)

SBN NUMBER: 0-03-022731-3

DESCRIPTION: INFORMATION CONCERNING THE CARE OF A VARIETY OF UNCOMMON PETS IS PRESENTED. TOPICS INCLUDE HANDLING, HOUSING, FEEDING, BREEDING, DISEASES, AND SPECIAL INFORMATION PERTAINING TO EACH TYPE OF PET. MOST OF THE CHAPTERS HAVE A LIST OF REFERENCES AND SUGGESTED READINGS. ANIMAL PETS INCLUDED ARE RABBITS; GUINEA PIGS; HAMSTERS; MICE; RATS; GERBILS; CHICKENS; DUCKS; FROGS, TOADS, AND SALAMANDERS; TURTLES AND TORTOISES; SNAKES AND LIZARDS; AND BUDGERIGARS, CANARIES, AND PARROTS. INSTRUCTIONS FOR BUILDING A CAGE ARE ALSO GIVEN. SPECIAL EMPHASIS IS PLACED ON THE APPROPRIATENESS OF EACH ANIMAL AS A PET, AND THE AUTHOR STRESSES WHEN AND HOW WILD ANIMALS SHOULD BE RETURNED TO THEIR NATIVE ENVIRONMENT. AN INDEX AND GLOSSARY ARE PROVIDED.

GRADE: 3-4

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: THE CARE OF WATER PETS

AUTHOR: GERTRUDE PELS

PUBLISHER: THOMAS Y. CROWELL

COPYRIGHT: 1955

PRICE: $6.95 (119 PAGES)

SBN NUMBER: 0-690-17071-8

DESCRIPTION: INSTRUCTIONS ARE PRESENTED FOR ESTABLISHING AND MAINTAINING FRESH-WATER AQUARIA WHICH INCLUDE ANIMALS OTHER THAN FISH. A CHAPTER IS INCLUDED ON HOW TO BUILD AN OUTDOOR POOL, AND AN INDEX IS PROVIDED.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Carolina Drosophila Manual

AUTHOR: Raymond O. Flagg

PUBLISHER: Carolina Biological Supply Co.

COPYRIGHT: 1973

PRICE: $1.00 (23 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Carolina Biological Supply Co., Burlington, North Carolina 27215. Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: The drosophila, or fruit fly, is often used in the study of genetics. This illustrated pamphlet provides information that the student can use to initiate and conduct an experiment in genetics. Procedures are given for culturing, anesthetizing, determining sex, mating, noting genetic types, and keeping records. There are suggestions for further reading.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Chemistry Experiments for Children

AUTHOR: Virginia L. Mullin

PUBLISHER: Dover Publications

COPYRIGHT: 1961

PRICE: $1.25 (96 pages, paper)

SBN NUMBER: 486-22031-1

SPECIAL INSTRUCTIONS: CAUTION: Some investigations use materials and procedures which should be used under the supervision of a qualified adult. Activities with benzene, carbon tetrachloride, mercury, and potassium ferricyanide are not recommended.

DESCRIPTION: This book presents procedures and techniques for investigating chemistry concepts. Terminology and chemical equations are discussed, and hints are provided for establishing a home laboratory. A safety section appears on pages 26-28. Other topics included are the chemistry of air, water, solutions, diffusion, osmosis, crystals, fire, acids, bases, salts, photography, and everyday things.

Many of the required materials can be found at home. Suggestions are provided for obtaining chemicals. An index is included.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Chemistry Project Cards

AUTHOR: Francis J. Grimes

PUBLISHER: The Center for Applied Research in Education

COPYRIGHT: 1978

PRICE: $7.95 (25 cards and a Teacher's Guide)

SBN NUMBER: 0-87628-660-0

SPECIAL INSTRUCTIONS: This set of project cards is part of a series that includes sets with the following titles: Biology Project Cards, Chemistry Project Cards, Earth Science Project Cards, Environmental Science Project Cards, Marine Science Project Cards, Physics Project Cards, and Psychology Project Cards.

The Teacher's Guide for each set describes the individual unit, lists necessary materials, suggests specific procedures, discusses safety precautions, provides answers, and suggests areas for review and further study.

Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

(PAGE 1 OF 2)

DESCRIPTION: EACH ACTIVITY CARD, APPROXIMATELY 15 CM X 23 CM, IS ON A SINGLE CONCEPT AND PROVIDES QUESTIONS FOR INQUIRY, LISTS OF MATERIALS, PROCEDURES, IDEAS FOR PRESENTING RESULTS, AND SUGGESTIONS FOR FURTHER STUDY.

THE ACTIVITIES IN THIS SET INCLUDE PRECIPITATION, HEAT REACTIONS, QUALITATIVE ANALYSIS OF FOOD, TITRATION, CHROMATOGRAPHY, ACIDS AND BASES, BOILING AND FREEZING POINTS, EVIDENCE OF CHEMICAL REACTIONS, AND WEIGHING.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Chemistry Projects and Science Fairs:
A Message to Students

AUTHOR: Elbert C. Weaver

PUBLISHER: Manufacturing Chemists Association

COPYRIGHT: 1974

PRICE: Free (12 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be obtained from the Manufacturing Chemists Association, 1825 Connecticut Avenue, N.W., Washington, D[illegible] 20009.

DESCRIPTION: Discussions concerning science fairs, suggestions for planning projects, conducting literature searches, conducting experimental work, and reporting and displaying projects are provided. Included are safety suggestions, the general criteria for judging the quality of a science fair project, suggested projects, and sources of additional information.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: COLLECTING FOSSILS

AUTHOR: ALAN MAJOR

PUBLISHER: ST. MARTIN'S PRESS

COPYRIGHT: 1974

PRICE: $8.95 (209 PAGES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THE METHODS FOR LOCATING, OBTAINING, PRESERVING, AND STORING FOSSILS ARE EXPLAINED. FOSSIL FORMATIONS AND GEOLOGICAL PERIODS ARE DESCRIBED, AND PERIOD MAPS ARE PROVIDED TO AID IN LOCATING AND IDENTIFYING ROCK FORMATIONS. TWO HUNDRED FOSSILS ARE ILLUSTRATED WITH LINE DRAWINGS AND COLOR PHOTOGRAPHS.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Collecting Rocks, Document 1978-261-226/23

AUTHOR: Rachel M. Barker

PUBLISHER: U.S. Geological Survey (U.S. Government Printing Office)

COPYRIGHT: 1978

PRICE: $.50 (11 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: Included are descriptions of rock types and their formation. General information on how to start a rock collection, rock identification, locations of rocks, necessary equipment, housing and enlarging a collection, and hints for rock collectors is provided.

GRADE: 3-5

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: CUP AND SAUCER CHEMISTRY

AUTHOR: NATHAN SHALIT

PUBLISHER: GROSSET AND DUNLAP

COPYRIGHT: 1972

PRICE: $2.95 (93 PAGES, PAPER)

SBN NUMBER: 0-448-11690-1

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: CHEMISTRY INVESTIGATIONS THAT USE COMMON HOUSEHOLD SUPPLIES ARE DESCRIBED AND ILLUSTRATED. THE INVESTIGATIONS ARE VARIED AND RANGE FROM ACIDS AND BASES TO PRECIPITATES AND SPECIFIC GRAVITY.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: *Earth Science Project Cards*

AUTHOR: Dr. John N. Fleming and Dr. Michael F. Fleming

PUBLISHER: The Center for Applied Research in Education

COPYRIGHT: 1978

PRICE: $7.95 (25 cards and a *Teacher's Guide*)

SBN NUMBER: 0-87628-664-3

DESCRIPTION: This set of project cards is part of a series that includes sets with the following titles: *Biology Project Cards*, *Chemistry Project Cards*, *Earth Science Project Cards*, *Environmental Science Project Cards*, *Marine Science Project Cards*, *Physics Project Cards*, and *Psychology Project Cards.*

The *Teacher's Guide* for each set describes the individual unit, lists necessary materials, suggests specific procedures, discusses safety precautions, provides answers, and suggests areas for review and further study.

Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

(PAGE 1 OF 2)

DESCRIPTION: EACH ACTIVITY CARD, APPROXIMATELY 15 CM X 23 CM, IS ON A SINGLE CONCEPT AND PROVIDES QUESTIONS FOR INQUIRY, LISTS OF MATERIALS, PROCEDURES, IDEAS FOR PRESENTING RESULTS, AND SUGGESTIONS FOR FURTHER STUDY.

THE ACTIVITIES IN THIS SET INCLUDE CLOUD CLASSIFICATION, TESTING HARDNESS OF MINERALS, WATER-HOLDING CHARACTERISTICS OF SOIL COMPONENTS, SOLAR ECLIPSES, DENSITY, CONSTRUCTING WEATHER INSTRUMENTS, DEW POINT, MOTION OF STARS, ABSORPTION OF HEAT, LIGHTNING PHOTOGRAPHY, AND WEATHERING OF ROCKS.

GRADE: 7-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: EARTH AND SPACE SCIENCE SKILLCARDS

AUTHOR: OTHO E. PERKINS

PUBLISHER: CHARLES E. MERRILL PUBLISHING CO.

COPYRIGHT: 1968

PRICE: $12.00 (72 CARDS)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: SOME OF THE ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE PACKAGE CONSISTS OF 72 SKILLCARDS, EACH WITH AN INVESTIGATION IN EARTH OR SPACE SCIENCE. THE INVESTIGATIONS COULD BE USEFUL FOR INDEPENDENT STUDY ACTIVITIES. EACH SKILLCARD CONTAINS FIVE SECTIONS: A STATEMENT OF THE PROBLEM, THE MATERIALS NEEDED, PROCEDURE, OBSERVATION, AND CONCLUSION. INCLUDED ARE INVESTIGATIONS ON SPACE AND SPACE TRAVEL, THE MOON, THE EARTH IN SPACE, THE EARTH'S CRUST, MINERALS, ROCKS, SOIL, RUNNING WATER, GROUND WATER, OCEANS, AND WEATHER.

GRADE: 3-6

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Earthwatch: Space-time Investigations with a Globe

AUTHOR: Julius Schwartz

PUBLISHER: McGraw-Hill Book Co.

COPYRIGHT: 1977

PRICE: $7.95 (63 pages)

SBN NUMBER: 0-07-055685-7

DESCRIPTION: Investigations using a globe and other readily available materials are described. The investigations are useful for discovering the relationship of the earth to the sun and moon. Some topics included are time, seasons, eclipses, and the earth's speed of rotation.

The appendix contains a chart of metric and English units and a list of earth facts.

Included are an index and a bibliography of books about space, time, and the globe.

GRADE: 3-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: EDISON EXPERIMENTS

AUTHOR: ROBERT F. SCHULTZ

PUBLISHER: THOMAS ALVA EDISON FOUNDATION

COPYRIGHT: 1969

PRICE: $.50 (28 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE ORDERED FROM THE THOMAS ALVA EDISON FOUNDATION, CAMBRIDGE OFFICE PLAZA, SUITE 143, 18280 WEST TEN MILE ROAD, SOUTHFIELD, MICHIGAN 48075.

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, MATERIALS, OR PROCEDURES THAT SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: FOURTEEN EXPERIMENTS ARE DESCRIBED THAT ILLUSTRATE THE PRINCIPLES BEHIND THE TELEPHONE, TELEGRAPH, AND ELECTRIC LIGHT BULB. MOST OF THE MATERIALS NEEDED TO COMPLETE THE PROJECTS ARE READILY AVAILABLE. DRY CELLS, NOT HOUSEHOLD CURRENT, ARE USED.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Edison Inventions and Related Projects

AUTHOR: Robert F. Schultz

PUBLISHER: Thomas Alva Edison Foundation

COPYRIGHT: 1968

PRICE: $.50 (30 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Thomas Alva Edison Foundation, Cambridge Office Plaza, Suite 143, 18200 West Ten Mile Road, Southfield, Michigan 48075.

Fumes of ammonium chloride (pp. 9-15) should not be inhaled. Use in a ventilated area.

DESCRIPTION: Four electrical projects requiring readily available items are described in detail. In addition to a list of materials and description of procedures, background information on each project is provided. The projects are an electric pen, a storage battery, a crystal radio, and a microphone. Dry cells are used, not household current.

GRADE: 3-5

TOPIC: ENERGY, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Electrical and Chemical Experiments ... from Edison

AUTHOR: Robert F. Schultz

PUBLISHER: Thomas Alva Edison Foundation

COPYRIGHT: 1970

PRICE: $.50 (32 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Thomas Alva Edison Foundation, Cambridge Office Plaza, Suite 143, 18280 West Ten Mile Road, Southfield, Michigan 48075.

Some of the suggested activities require the use of chemicals, materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: Twelve experiments are described that demonstrate chemistry, electricity, and the relationship between them. Examples are how a doorbell circuit works, electricity from a lemon, and candy crystals from a sugar solution. Dry cells are used, not household current.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Electrical Experiments You Can Do, rev. ed.

AUTHOR: Robert F. Schultz

PUBLISHER: Thomas Alva Edison Foundation

COPYRIGHT: 1966

PRICE: $.50 (27 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Thomas Alva Edison Foundation, Cambridge Office Plaza, Suite 143, 18280 West Ten Mile Road, Southfield, Michigan 48075.

DESCRIPTION: Provided are biographical information of Thomas Edison and Michael Faraday and descriptions of five of Faraday's important experiments.

Five simple investigations are described, including lists of materials and a discussion of procedures. The investigations are observing magnetic fields, magnetizing objects, storage of electrical charges, conductivity tester, and an electroplating apparatus. Household current is not used.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: ELECTRICITY EXPERIMENTS FOR CHILDREN

AUTHOR: GABRIEL REUBEN

PUBLISHER: DOVER PUBLICATIONS

COPYRIGHT: 1960

PRICE: $1.25 (88 PAGES, PAPER)

SBN NUMBER: 486-22030-3

SPECIAL INSTRUCTIONS: CAUTION: FOUR OF THE DEMONSTRATIONS SHOULD BE PERFORMED ONLY UNDER THE DIRECT SUPERVISION OF A QUALIFIED ADULT. THESE DEMONSTRATIONS ARE FOUND ON PP. 42-43, PP. 44-45, P. 70, AND P. 71.

DESCRIPTION: THIS BOOK IS A REFERENCE FOR DEMONSTRATION PROJECTS ON THE PRINCIPLES OF MAGNETISM, ELECTRICITY, ELECTRONICS, AND NUCLEAR ENERGY.

MOST OF THE EQUIPMENT REQUIRED FOR THE DEMONSTRATIONS CAN BE FOUND AROUND THE HOUSE. AN INDEX IS INCLUDED.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Energy Conservation Experiments You Can Do, rev. ed.

AUTHOR: None Given

PUBLISHER: Thomas Alva Edison Foundation

COPYRIGHT: 1977

PRICE: $.50 (32 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Thomas Alva Edison Foundation, Cambridge Office Plaza, Suite 143, 18260 West Ten Mile Road, Southfield, Michigan 48075.

DESCRIPTION: Descriptions are given of 11 experiments demonstrating energy usage and conservation. All use simple household materials. Projects include such subjects as heating and air conditioning, hot water, appliances and lighting, and energy sources of the future.

GRADE: 3-6

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: ENVIRONMENTAL EXPERIMENTS ... FROM EDISON

AUTHOR: ROBERT F. SCHULTZ

PUBLISHER: THOMAS ALVA EDISON FOUNDATION

COPYRIGHT: 1973

PRICE: $.50 (32 PAGES, PAPER)

SBS NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE ORDERED FROM THE THOMAS ALVA EDISON FOUNDATION, CAMBRIDGE OFFICE PLAZA, SUITE 143, 18280 WEST TEN MILE ROAD, SOUTHFIELD, MICHIGAN 48075.

DESCRIPTION: TWELVE INVESTIGATIONS FOR STUDYING THE ENVIRONMENT ARE DESCRIBED. EACH DESCRIPTION CONTAINS BACKGROUND INFORMATION, PROCEDURES, AND A LIST OF NECESSARY MATERIALS WHICH ARE COMMON HOUSEHOLD ITEMS. PROJECTS INCLUDED ARE POLLUTION MONITORS, RECYCLING TECHNIQUES, FILTERING AND RECLAMATION PROCEDURES, AND SOIL INVESTIGATIONS.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: ENVIRONMENTAL SCIENCE PROJECT CARDS

AUTHOR: NECIJA VANBASSELAERE

PUBLISHER: THE CENTER FOR APPLIED RESEARCH IN EDUCATION

COPYRIGHT: 1978

PRICE: $7.95 (25 CARDS AND A TEACHER'S GUIDE)

SBN NUMBER: 0-87628-659-7

SPECIAL INSTRUCTIONS: THIS SET OF PROJECT CARDS IS PART OF A SERIES THAT INCLUDES SETS WITH THE FOLLOWING TITLES: BIOLOGY PROJECT CARDS, CHEMISTRY PROJECT CARDS, EARTH SCIENCE PROJECT CARDS, ENVIRONMENTAL SCIENCE PROJECT CARDS, MARINE SCIENCE PROJECT CARDS, PHYSICS PROJECT CARDS, AND PSYCHOLOGY PROJECT CARDS.

THE TEACHER'S GUIDE FOR EACH SET DESCRIBES THE INDIVIDUAL UNIT, LISTS NECESSARY MATERIALS, SUGGESTS SPECIFIC PROCEDURES, DISCUSSES SAFETY PRECAUTIONS, PROVIDES ANSWERS, AND SUGGESTS AREAS FOR REVIEW AND FURTHER STUDY.

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

(PAGE 1 OF 2)

DESCRIPTION: EACH ACTIVITY CARD, APPROXIMATELY 15 CM X 23 CM, IS ON A SINGLE CONCEPT AND PROVIDES QUESTIONS FOR INQUIRY, LISTS OF MATERIALS, PROCEDURES, IDEAS FOR PRESENTING RESULTS, AND SUGGESTIONS FOR FURTHER STUDY.

THE ACTIVITIES IN THIS SET INCLUDE HOMEMADE SOIL, POLLUTION, SUCCESSION IN THE AQUATIC COMMUNITY, PROTECTIVE COLORATION AND SURVIVAL, WATER TESTING, POPULATION GROWTH, AND POLLEN.

(PAGE 2 OF 2)

GRADE: 3-5

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: Exploring with a Microscope

AUTHOR: Seymour Simon

PUBLISHER: Random House

COPYRIGHT: 1969

PRICE: $4.95 (79 pages)

SBN NUMBER: 394-80157-1

DESCRIPTION: This book explains and illustrates the use of a microscope. Chapters help the student study protozoa, plants, animal cells, insects, and nonliving materials. The book contains a directory of microscope manufacturers and supply houses, a bibliography, and an index.

GRADE: 5-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Fascinating Experiments in Physics

AUTHOR: François Cherrier

PUBLISHER: Sterling Publishing Co.

COPYRIGHT: 1978

PRICE: $8.95 (96 pages)

SBN NUMBER: 0-8069-3105-1

SPECIAL INSTRUCTIONS: Some of the suggested activities require the use of chemicals, other materials, or procedures which should be used under the supervision of a qualified adult.

DESCRIPTION: Instructions are provided for constructing apparatus to illustrate physics principles. The topics include magnets, fluids, mirrors, forces, light, sound, and heat. Included are a list of needed supplies and tools and an index.

GRADE: 3-8

TOPIC: LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: First Aid and Care of Small Animals

AUTHOR: Ernest P. Walker

PUBLISHER: Animal Welfare Institute

COPYRIGHT: 1955

PRICE: $.35 (45 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: A wide range of activities is provided for raising and caring for small wild animals. Topics covered include first aid and rehabilitation for wild animals, caring for injured and ill animals, and housing and feeding. Separate sections give information on mammals, birds, reptiles, amphibians, fish and invertebrates. An extensive bibliography is included. There is an emphasis on the humane and gentle treatment of all animals and the return of wild animals to their natural environment as soon as they are healthy.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: PROJECT IDEAS

TITLE: FIRST CHEMISTRY BOOK FOR BOYS AND GIRLS

AUTHOR: ALFRED MORGAN

PUBLISHER: CHARLES SCRIBNER'S SONS

COPYRIGHT: 1950

PRICE: $5.95 (181 PAGES)

SBN NUMBER: 684-14755-6

SPECIAL INSTRUCTIONS: CAUTION: THE SAFETY SECTION ON PAGES 10 AND 11 SHOULD BE READ PRIOR TO BEGINNING ANY OF THE ACTIVITIES. SOME ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER LABORATORY MATERIALS, AN OPEN FLAME, AND PROCEDURES WHICH SHOULD BE USED UNDER THE SUPERVISION OF A QUALIFIED ADULT.

DESCRIPTION: A VARIETY OF CHEMISTRY INVESTIGATIONS ARE PRESENTED WHICH UTILIZE MANY COMMON HOUSEHOLD MATERIALS AND EASILY OBTAINED CHEMICALS. UNDERLYING PRINCIPLES ARE DISCUSSED AND EACH INVESTIGATION AND ITS EXPECTED RESULTS ARE DESCRIBED. TOPICS INCLUDE WATER, COMBUSTION, FOODS AND MEDICINES, ACIDS AND BASES, CARBON DIOXIDE, OCEAN WATER AND ITS CHEMICALS, SILVER AND ITS USES, AND SOAP AND DETERGENTS. AN INDEX IS INCLUDED.

GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: FIRST YOU CATCH A FLY

AUTHOR: JOHN D. CUNNINGHAM

PUBLISHER: McCALL PUBLISHING CO.

COPYRIGHT: 1970

PRICE: $4.95 (88 PAGES)

SBN NUMBER: 0-525-29750-2

DESCRIPTION: INVESTIGATIONS AND PROJECTS USING COMMON HOUSEFLIES ARE DESCRIBED. TECHNIQUES FOR CAPTURING AND REARING FLIES ARE INCLUDED. STUDENTS CAN APPLY SCIENCE RESEARCH SKILLS BY DEVELOPING THE DESCRIBED PROJECTS. A GLOSSARY IS INCLUDED.

GRADE: 5-8

TOPIC: ENERGY, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: The Flying Circus of Physics

AUTHOR: Jearl Walker

PUBLISHER: John Wiley and Sons

COPYRIGHT: 1975

PRICE: $8.50 (224 pages, paper)

SBN NUMBER: 0-471-91808-3

SPECIAL INSTRUCTIONS: Answers and explanations are not provided directly for the problems posed in this book. References are given for the investigator to find information on possible solutions. Some of the references are readily available in a school or public library. Others will be found in technical, research, or specialized libraries only.

DESCRIPTION: Presented are 619 physics problems ranging from elementary to graduate school level. The problems are subdivided into sound, mechanics, heat and pressure, liquids, optics, electricity, and assorted problems. The problems could be used to develop a project. Each description includes one or more references, and some contain background information. A bibliography and index are included. The author, Jearl Walker, regularly writes the "Amateur Scientist" article in issues of Scientific American.

GRADE: 4-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Food Chains and Ecosystems

AUTHOR: George I. Schwartz and Bernice S. Schwartz

PUBLISHER: Doubleday and Co.

COPYRIGHT: 1974

PRICE: $5.95 (109 pages)

SBN NUMBER: 0-385-08000-X

DESCRIPTION: Included are investigations, with explanations, on plant and animal food chains and ecosystems. The investigations can be performed in natural environments near home and do not require elaborate or expensive equipment.

A list of investigations, a bibliography, supply sources, and an index are provided.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: The Gadget Book

AUTHOR: Harvey Weiss

PUBLISHER: Thomas Y. Crowell

COPYRIGHT: 1971

PRICE: $6.50 (60 pages)

SBN NUMBER: 0-690-32124-4

SPECIAL INSTRUCTIONS: Projects using electricity or projectiles should be done only under the supervision of a qualified adult.

DESCRIPTION: Twenty-four easy-to-make gadgets, some of which include scientific concepts or energy sources (e.g., gravity, magnetism, electricity) are described. Examples are tools, toys and games, and measuring devices. The basic science principles of each are given. General directions for constructing the gadget are provided.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: GARDENING WITHOUT SOIL

AUTHOR: JAN JOHNSEN

PUBLISHER: J.B. LIPPINCOTT

COPYRIGHT: 1979

PRICE: $7.89

SBN NUMBER: 0-397-31729-8

DESCRIPTION: HYDROPONIC AND OTHER SOILLESS GARDENING TECHNIQUES ARE DESCRIBED, AND SUGGESTIONS FOR PROJECTS AND INVESTIGATIONS ARE PROVIDED. EACH DESCRIPTION CONTAINS A LIST OF MATERIALS AND EQUIPMENT AND A SUGGESTED PROCEDURE. TOPICS INCLUDED ARE THE BASIC NEEDS OF PLANTS, GROWING PLANTS IN WATER, SOILLESS MEDIA, THE USE OF NUTRIENT SOLUTIONS, AND APPLYING HYDROPONIC TECHNIQUES TO GARDENING. A BIBLIOGRAPHY AND INDEX ARE INCLUDED.

GRADE: 5-8

TOPIC: LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: GROCERY STORE ZOOLOGY

AUTHOR: JOAN ELMA RAHN

PUBLISHER: ATHENEUM PRESS

COPYRIGHT: 1977

PRICE: $6.95 (145 PAGES)

SBN NUMBER: 0-689-30560-5

DESCRIPTION: INFORMATION AND ACTIVITIES ARE PROVIDED FOR INVESTIGATING THE HUMAN BODY THROUGH COMPARISONS WITH BONES AND MEAT FROM COWS, CHICKENS, PIGS, AND RABBITS. A GLOSSARY AND AN INDEX ARE INCLUDED.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: The Hidden World: The Story of Microscopic Life

AUTHOR: Paul Villiard

PUBLISHER: Four Winds Press

COPYRIGHT: 1975

PRICE: $6.50 (89 pages)

SBN NUMBER: 0-590-07307-9

DESCRIPTION: The book includes chapters on using a microscope to observe microorganisms and on investigations of plants, animals, nonliving materials, and air and water pollution.

In addition, information on the use and care of a microscope, purchase of inexpensive equipment, and preparation of slides is given. Some materials for the activities are found around the home. An index is included.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: How to . . . Activities in Meteorology

AUTHOR: Donald N. Nimmer and Richard L. Sagness

PUBLISHER: National Science Teachers Association

COPYRIGHT: 1978

PRICE: $1.00 (12 pages, paper), Stock No. 471-14756

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This publication can be obtained from the National Science Teachers Association, 1742 Connecticut Avenue, NW, Washington, DC 20009.

DESCRIPTION: Twenty-six activities for investigating meteorology are described. Each activity includes an introduction, a list of materials, procedures, data collection, and additional questions. The topics include making a thermometer, air, barometers, particles in the air, evaporation, relative humidity, the relationship between temperature and humidity, dew point, temperatures of different earth surfaces, the heating of land and water, soil and water temperature changes throughout the day, breezes, making a wind vane, making a raingauge, and snow. References are provided.

GRADE: 5-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: HOW TO . . . ACTIVITIES IN PHYSICAL OCEANOGRAPHY

AUTHOR: DONALD N. NIMMER AND RICHARD L. SAGNESS

PUBLISHER: NATIONAL SCIENCE TEACHERS ASSOCIATION

COPYRIGHT: 1978

PRICE: $1.00 (8 PAGES, PAPER), STOCK NO. 471-14754

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PUBLICATION CAN BE OBTAINED FROM THE NATIONAL SCIENCE TEACHERS ASSOCIATION, 1742 CONNECTICUT AVENUE, NW, WASHINGTON, DC 20009.

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: SIXTEEN ACTIVITIES FOR INVESTIGATING PHYSICAL OCEANOGRAPHY ARE DESCRIBED. EACH DESCRIPTION INCLUDES AN INTRODUCTION, A LIST OF MATERIALS, PROCEDURES, DATA COLLECTION, AND ADDITIONAL QUESTIONS. THE TOPICS INCLUDE WATER HARDNESS, FRESH WATER FROM SEA WATER, WATER PRESSURE AND DEPTH, THE MEASUREMENT OF WATER CLARITY, COLLECTING AND ANALYZING WATER SAMPLES FROM DIFFERENT DEPTHS, WAVES, BEACH FORMATION AND EROSION, DENSITY CURRENTS, AND ICEBERGS. REFERENCES ARE PROVIDED.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: HOW TO BUILD A BETTER MOUSETRAP CAR -- AND OTHER EXPERIMENTAL FUN

AUTHOR: AL G. RENNER

PUBLISHER: DODD, MEADE & CO.

COPYRIGHT: 1977

PRICE: $5.25 (128 PAGES)

SBN NUMBER. 396-07419-7

DESCRIPTION: A VARIETY OF ACTIVITIES AND PROJECTS ARE DESCRIBED. ALL CAN BE COMPLETED USING EASILY OBTAINED AND INEXPENSIVE MATERIALS. TOPICS INCLUDE MOUSETRAP CARS, FRISBEES, EGG DROPS (PACKAGING TO PREVENT BREAKAGE), TOOTHPICK BRIDGES, WINDMILLS, AND FIRE BOWS (FRICTION FIRE STARTERS). THE EXPERIMENTER BUILDS THE ORIGINAL MODELS AND REBUILDS THEM AS HE/SHE TESTS SCIENTIFIC DATA. INCLUDED ARE SUGGESTIONS FOR TEACHERS AND AN INDEX.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: How to Build Five Useful Electrical Devices, rev. ed.

AUTHOR: Robert F. Schultz

PUBLISHER: Thomas Alva Edison Corporation

COPYRIGHT: 1971

PRICE: $.50 (30 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Thomas Alva Edison Foundation, Cambridge Office Plaza, Suite 143, 18280 West Ten Mile Road, Southfield, Michigan 48075.

DESCRIPTION: A description of five electrical devices, how they work, the materials needed, and procedures for building them is provided. They are a circuit tester, electromagnetic device, electric motor, buzzer, and portable burglar alarm. Dry cells are used, not household current.

GRADE: 7-8

TOPIC: LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: HOW TO DISSECT: EXPLORING WITH PROBE AND SCALPEL, 3RD EDITION

AUTHOR: WILLIAM BERMAN

PUBLISHER: ARCO PUBLISHING CO.

COPYRIGHT: 1978

PRICE: $3.25 (183 PAGES, PAPER)

SBN NUMBER: 0-688-04331-8

SPECIAL INSTRUCTIONS: THIS BOOK DESCRIBES DISSECTION OF PRESERVED ANIMALS ONLY. THE TEACHER SHOULD STRONGLY DISCOURAGE THE STUDENT FROM TRYING ANY INVESTIGATIONS WITH LIVE VERTEBRATE ANIMALS WHICH RESULT IN PAIN, DISCOMFORT, POOR HEALTH, OR DEATH.

DESCRIPTION: THIS BOOK PROVIDES CLEAR, EASY-TO-FOLLOW DIRECTIONS FOR DISSECTING A PRESERVED EARTHWORM, CRAYFISH, GRASSHOPPER, STARFISH, SQUID, DOGFISH SHARK, FROG, FETAL PIG, AND GLADIOLUS. SUGGESTIONS ARE PROVIDED FOR MORE ADVANCED DISSECTIONS AND OTHER INVESTIGATIONS.

GRADE:	5-8
TOPIC:	ENERGY, LAB SKILLS - NATURE OF SCIENCE, MATTER, UNIVERSE IN CHANGE
CATEGORY:	PROJECT IDEAS

TITLE:	HOW SCIENTISTS FIND OUT: ABOUT MATTER, SPACE, ENERGY, TIME
AUTHOR:	HERMAN SCHNEIDER
PUBLISHER:	McGRAW-HILL BOOK CO.
COPYRIGHT:	1976
PRICE:	$7.95 (133 PAGES)
SBN NUMBER:	0-07-055448-X

SPECIAL INSTRUCTIONS:	SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.
DESCRIPTION:	INCLUDED ARE THE SPECIAL PROCEDURES AND TECHNIQUES USED BY SCIENTISTS TO STUDY MATTER, TIME, SPACE, AND ENERGY. INVESTIGATIONS AND PROJECTS ARE DESCRIBED. A BIBLIOGRAPHY AND INDEX ARE PROVIDED.

GRADE: 6-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: HUMANE BIOLOGY PROJECTS, 3RD ED.

AUTHOR: NONE GIVEN

PUBLISHER: THE ANIMAL WELFARE INSTITUTE

COPYRIGHT: 1977 (57 PAGES, PAPER)

PRICE: $2.95

SBN NUMBER: NONE GIVEN

DESCRIPTION: HUMANE METHODS AND INVESTIGATIONS ARE SUGGESTED FOR STUDYING LIVING THINGS. THEY ARE INTENDED TO HELP THE STUDENT DEVELOP ORIGINAL THINKING, PRECISE OBSERVATION, AN UNDERSTANDING OF SCIENTIFIC PROCEDURES, AND RESPECT FOR THE RIGHTS AND FEELINGS OF ALL FORMS OF LIFE WHICH POSSESS SENSIBILITY.

TOPICS INCLUDE ECOLOGY AND CONSERVATION, BACTERIOLOGY, ANIMAL BEHAVIOR, GENETICS, BOTANY, PHYSIOLOGY, AND BIOCHEMISTRY. REFERENCES ARE PROVIDED IN EACH CHAPTER, AND A LIST OF BOOKS AND RECORDINGS ARE RECOMMENDED FOR STUDY, DISCUSSION, OR DEBATE.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: Hunting with the Microscope, rev. ed.

AUTHOR: Gaylord Johnson and Maurice Bleifeld

PUBLISHER: Arco Publishing Co.

COPYRIGHT: 1974

PRICE: $2.25 (126 pages, paper)

SBN NUMBER: 0-668-03249-9

DESCRIPTION: Explanations are provided of the procedures and equipment needed to explore the microscopic world of plants and animals. This book gives suggestions on how to microscopically examine blood, food, fibers, fingerprints, and handwriting. Step-by-step procedures are given for the collection and preparation of specimens.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: IDEAS FOR SCIENCE FAIR PROJECTS

AUTHOR: RONALD BENREY ET AL.

PUBLISHER: ARCO PUBLISHING CO.

COPYRIGHT: 1962

PRICE: $7.95, BOOK; $.50, JUDGING GUIDE; $.50, RULE BOOK

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THE JUDGING CRITERIA AND RULES CITED FOR NATIONAL AND LOCAL FAIRS ARE DATED AND NO LONGER APPLICABLE. THIS IS PARTICULARLY IMPORTANT CONCERNING SAFETY AND ANIMAL EXPERIMENTATION. CURRENT CRITERIA AND RULES FOR THE ANNUAL INTERNATIONAL SCIENCE AND ENGINEERING FAIR (ISEF) ARE AVAILABLE FROM SCIENCE SERVICE, INC., 1719 N STREET, NW, WASHINGTON, DC 20036 (PHONE: (202) 785-2255) AT THE PRICES LISTED ABOVE.

THE MONTGOMERY AREA SCIENCE FAIR FOLLOWS THE GUIDELINES FOR THE ISEF, WITH MINOR MODIFICATIONS TO ACCOMMODATE LOCAL NEEDS. THESE ARE AVAILABLE FROM DR. JOHN R. PANCELLA, COORDINATOR, SECONDARY SCIENCE AND SCIENCE FAIR DIRECTOR, MONTGOMERY COUNTY PUBLIC SCHOOLS, ROCKVILLE, MD 20850 (PHONE: (301) 279-3421).

DESCRIPTION: INFORMATION IS PRESENTED ON CONDUCTING AND BUILDING A SCIENCE FAIR PROJECT. INCLUDED ARE CHOOSING A TOPIC, TYPES OF PROJECTS, PLANNING, DOCUMENTATION, RESEARCH, BUILDING THE PROJECT, AND ITS PRESENTATION. TWELVE PROJECTS ARE DISCUSSED IN DETAIL. A LIST OF SUPPLIERS IS PROVIDED.

(PAGE 2 OF 2)

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: INSECT ZOO: HOW TO COLLECT AND CARE FOR INSECTS

AUTHOR: CONSTANCE EWBANK

PUBLISHER: WALKER & CO.

COPYRIGHT: 1973

PRICE: $5.00 (96 PAGES)

SBN NUMBER: 8027-6146-1

DESCRIPTION: HELPFUL HINTS ARE PROVIDED FOR STARTING AND CARING FOR AN INSECT ZOO. INSECT HABITS AND WAYS OF KEEPING COLLECTED INSECTS ALIVE ARE DISCUSSED. SPECIFIC INSECT GROUPS INCLUDED ARE BUGS AND BEETLES, WATER INSECTS, "SINGING" INSECTS, GRASSHOPPER COUSINS, BUTTERFLIES AND MOTHS, AND COCOONS AND CATERPILLARS. SUGGESTIONS ARE GIVEN FOR OBTAINING HELP IN IDENTIFYING INSECTS. INCLUDED ARE THE U.S. GOVERNMENT PRINTING OFFICE ADDRESS FOR REQUESTING A PRICE LIST OF INSECT BULLETINS, A BIBLIOGRAPHY, AND AN INDEX.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Investigating Ecology

AUTHOR: Elliott H. Blaustein and Rose Blaustein

PUBLISHER: Arco Publishing Co.

COPYRIGHT: 1978

PRICE: $7.95 (140 pages, paper)

SBN NUMBER: 0-668-03853-5

SPECIAL INSTRUCTIONS: Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: Presented are problems and background information for ecological investigations. The topics included are human ecology, environmental factors, natural cycles, energy transfer, the balance of nature, and communities. An appendix includes helpful information for completing the investigations. A list of ecology textbooks and an index are provided.

GRADE: 3-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: INVESTIGATING SCIENCE IN THE SWIMMING POOL AND OCEAN

AUTHOR: NORMAN D. ANDERSON

PUBLISHER: MCGRAW-HILL BOOK CO.

COPYRIGHT: 1978

PRICE: $7.95 (175 PAGES)

SBN NUMBER: 0-07-001634-8

DESCRIPTION: INVESTIGATIONS INVOLVING WATER IN POOLS, PONDS, RIVERS, LAKES, AND THE OCEAN ARE DESCRIBED. FOR EACH INVESTIGATION BACKGROUND INFORMATION, LEADING QUESTIONS TO INVESTIGATE, AND A DISCUSSION OF THE UNDERLYING PRINCIPLES ARE GIVEN. TOPICS INCLUDE DENSITY, SIPHONS, REFLECTION AND REFRACTION OF LIGHT, OBSERVING AND COLLECTING PLANTS AND ANIMALS, WAVES, BEACH PROFILES, WIND, AND SALINITY. AN APPENDIX OF MEASUREMENT UNITS AND CONVERSION CHARTS, SUGGESTED BOOKS FOR ADDITIONAL READING, AND AN INDEX ARE PROVIDED.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: INVESTIGATING SCIENCE WITH NAILS

AUTHOR: LAURENCE B. WHITE

PUBLISHER: ADDISON-WESLEY PUBLISHING CO.

COPYRIGHT: 1970

PRICE: $5.95 (108 PAGES)

SBN NUMBER: 201-08651-4

SPECIAL INSTRUCTIONS: CAUTION: INVESTIGATIONS WHICH USE AN OPEN FLAME SHOULD BE DONE UNDER ADULT SUPERVISION.

DESCRIPTION: SCIENCE INVESTIGATIONS WITH NAILS ARE DESCRIBED. THE INVESTIGATIONS ILLUSTRATE THE WAYS NAILS CAN BE USED TO STUDY PROPERTIES OF MAGNETISM, HEAT TRANSFER, AND ENERGY. A SECTION OF THIS BOOK IS DEVOTED TO MATHEMATICAL PUZZLES. AN INDEX IS INCLUDED.

GRADE: 3-6

TOPIC: ENERGY, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Investigating Science with Paper

AUTHOR: Laurence B. White, Jr.

PUBLISHER: Addison-Wesley Publishing Co.

COPYRIGHT: 1970

PRICE: $5.95 (123 pages)

SBN NUMBER: 0-201-08658-1

SPECIAL INSTRUCTIONS: CAUTION: Several investigations require the use of an open flame and/or other heat source. These investigations should be conducted under the supervision of an adult.

DESCRIPTION: Investigations and demonstrations using paper are described, and the underlying scientific principles are discussed. Materials and procedures are clearly outlined. Topics included are paper-making, absorption, and building with paper. The two final chapters deal with math-oriented paper activities and other topics.

The materials needed are a variety of types of paper and common household chemicals and equipment. An index is included.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: INVESTIGATING SCIENCE WITH RUBBER BANDS

AUTHOR: LAURENCE B. WHITE, JR.

PUBLISHER: ADDISON-WESLEY PUBLISHING CO.

COPYRIGHT: 1969

PRICE: $5.95 (95 PAGES)

SBN NUMBER: 0-201-08656-5

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: SCIENCE INVESTIGATIONS USING RUBBER BANDS AND HOUSEHOLD ITEMS ARE DESCRIBED AND ILLUSTRATED. INCLUDED ARE INVESTIGATIONS ON CHEMISTRY, HOW THE HUMAN BODY WORKS, AND THE MATHEMATICS AND PHYSICS OF MUSIC (SOUND). AN INDEX IS INCLUDED.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: JUNIOR SCIENCE PROJECTS

AUTHOR: NONE GIVEN

PUBLISHER: ARCO PUBLISHING CO.

COPYRIGHT: 1967

PRICE: $7.95 (175 PAGES)

SBN NUMBER: 0-668-01561-6

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: SCIENCE PROJECTS AND RELATED INVESTIGATIONS ARE DESCRIBED IN A STEP-BY-STEP MANNER. EXAMPLES OF THE PROJECTS INCLUDE AN INFRARED DETECTOR, ELECTRONIC STETHOSCOPE, SPECTROSCOPE, ELECTRIC SLIDE RULE, PARABOLIC REFLECTOR, ION EXCHANGE FUEL CELL, PROJECTOR SCOPE, SOLAR FURNACE, AND TESLA COIL. EXPLANATIONS OF THE UNDERLYING PRINCIPLES ARE PROVIDED.

GRADE: 4-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Laser Light

AUTHOR: Herman Schneider

PUBLISHER: McGraw-Hill Book Co.

COPYRIGHT: 1978

PRICE: $7.95 (114 pages)

SBN NUMBER: 0-07-055451-X

DESCRIPTION: Included are background information and simple, safe investigations on light and laser light. An index is provided. Topics include light sources, properties of light, the atom and its relationship to light, laser light, and uses of laser light.

GRADE: 3-6

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: LET'S EXPERIMENT

AUTHOR: MARTIN L. KEEN

PUBLISHER: GROSSET AND DUNLAP

COPYRIGHT: 1968

PRICE: $3.95 (160 PAGES, PAPER)

SBN NUMBER: 0-448-03364-X

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE USED UNDER THE SUPERVISION OF A QUALIFIED ADULT.

DESCRIPTION: INCLUDED ARE OVER 150 INVESTIGATIONS IN THE PHYSICAL AND BIOLOGICAL SCIENCES. THE NECESSARY MATERIALS ARE EASILY OBTAINED OR LOCATED AT HOME. TOPICS INCLUDE AIR AND WATER, WEATHER, ASTRONOMY, SOUND, HEAT, MAGNETISM, CHEMISTRY, ELECTRICITY, LIGHT, THE MICROSCOPE, MACHINES, AND BIOLOGY.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: LEWIS HOWARD LATIMER: A BLACK INVENTOR

AUTHOR: KOOLAKIAN, ROBERT G.

PUBLISHER: THOMAS ALVA EDISON FOUNDATION

COPYRIGHT: 1973

PRICE: FREE (32 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS PAMPHLET CAN BE ORDERED FROM THE THOMAS ALVA EDISON FOUNDATION, CAMBRIDGE OFFICE PLAZA, SUITE 143, 18280 WEST TEN MILE ROAD, SOUTHFIELD, MICHIGAN 48075.

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF MATERIALS WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE BOOK PRESENTS A SHORT BIOGRAPHY OF LEWIS LATIMER, AN INVENTOR, POET, PATENT ATTORNEY, AND DRAFTSMAN. INCLUDED ARE INSTRUCTIONS FOR SEVEN ELECTRICAL PROJECTS, E.G., BUILDING A SWITCH, A BURGLAR ALARM, AND AN AIR COOLER.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: Life Science Skillcards

AUTHOR: William Tilsner

PUBLISHER: Charles E. Merrill Publishing Co.

COPYRIGHT: 1969

PRICE: $12.00 (72 cards)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Some of the activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult. Other activities could result in the inhumane treatment of animals and are not recommended. Any activities involving pain or discomfort that are not a part of the animal's natural environment or that result in the death of the animal should not be done. Contact the Science Coordinator if you have any specific questions.

DESCRIPTION: This package consists of 72 skillcards, each with an investigation in the life sciences. The investigations could be useful for independent study activities. Each skillcard contains five sections: a statement of the

(PAGE 1 OF 2)

PROBLEM, THE MATERIALS NEEDED, PROCEDURE, OBSERVATIONS, AND CONCLUSION. INCLUDED ARE INVESTIGATIONS ON BACTERIA, MICROSCOPIC LIFE, PLANT CELLS, PLANTS AND THEIR RESPONSES, PLANT REPRODUCTION, ANIMAL CELLS, ANIMAL TISSUES AND ORGANS, ANIMAL DEVELOPMENT AND NUTRITION, AND THE OBSERVATION OF ANIMALS.

(PAGE 2 OF 2)

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: MAGIC WITH SCIENCE

AUTHOR: WALTER B. GIBSON

PUBLISHER: GROSSET AND DUNLAP

COPYRIGHT: 1968

PRICE: $5.95 (119 PAGES, PAPER)

SBN NUMBER: 0-448-11564-6

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: INCLUDED ARE PUZZLING INVESTIGATIONS THAT MIGHT BE CARRIED OUT AS MAGIC DEMONSTRATIONS. PHYSICAL SCIENCE TOPICS INCLUDE INERTIA, EQUILIBRIUM, LIQUIDS, ACOUSTICS, AERODYNAMICS, ELECTRICITY, AND MAGNETS.

GRADE: 5-8

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: MAINTAINING FISHES FOR EXPERIMENTAL AND INSTRUCTIONAL PURPOSES

AUTHOR: WILLIAM M. LEWIS

PUBLISHER: SOUTHERN ILLINOIS UNIVERSITY PRESS

COPYRIGHT: 1963

PRICE: $5.00 (100 PAGES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THE TECHNIQUES FOR MAINTAINING AND CARING FOR FISH ARE DESCRIBED. INCLUDED ARE SUGGESTIONS BEYOND THE INTRODUCTORY LEVEL FOR SETTING UP AN AQUARIUM AND INFORMATION ON FILTRATION, AERATION, THE CONTROL OF FISH DISEASES AND PARASITES, AQUARIUM WATER CHEMISTRY, AND HINTS ON THE TRANSPORTATION OF FISH. THE APPENDIX CONTAINS CHARTS AND TABLES USEFUL FOR THE MEDICAL TREATMENT AND FEEDING OF FISH AS WELL AS MEASUREMENT CONVERSION CHARTS. INCLUDED ARE AN INDEX AND BIBLIOGRAPHY.

GRADE: 3

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: MAKING A NATIVE PLANT TERRARIUM

AUTHOR: D.J. HERDA

PUBLISHER: JULIAN MESSNER

COPYRIGHT: 1977

PRICE: $7.29 (93 PAGES)

SBN NUMBER: 0-671-32880-8

DESCRIPTION: DESCRIBED ARE THE PROCEDURES FOR ESTABLISHING AND CARING FOR A NATIVE PLANT TERRARIUM. ALSO PROVIDED ARE AN ILLUSTRATED LIST OF NATIVE PLANTS, THE ADDRESSES FOR ORDERING NATIVE PLANTS, AND AN INDEX.

GRADE: 5-8

TOPIC: ENERGY, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: MAKING SCIENTIFIC TOYS

AUTHOR: CARSON I.A. RITCHIE

PUBLISHER: THOMAS NELSON

COPYRIGHT: 1975

PRICE: $6.95 (169 PAGES)

SBN NUMBER: 08407-6433-2

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: DETAILED INSTRUCTIONS FOR MAKING SCIENTIFIC TOYS AND DISCUSSIONS REGARDING THE RELATED SCIENTIFIC PRINCIPLES ARE PROVIDED. THE TYPES OF TOYS INCLUDED ARE OPTICAL, ACOUSTICAL, WEATHER, CHEMICAL, AND BATTERY-OPERATED.

GRADE:	7-8
TOPIC:	LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS - ENVIRONMENT
CATEGORY:	PROJECT IDEAS

TITLE:	MANUAL OF FIELD BIOLOGY AND ECOLOGY, 5TH ED.
AUTHOR:	ALLEN H. BENTON AND WILLIAM E. WERNER, JR.
PUBLISHER:	BURGESS PUBLISHING CO.
COPYRIGHT:	1972
PRICE:	$5.25 (230 PAGES, PAPER)
SBN NUMBER:	NONE GIVEN

DESCRIPTION: BIOLOGY AND ECOLOGY TOPICS FOR FIELD STUDY ARE DISCUSSED. SOME DISCUSSIONS ARE CORRELATED WITH A LABORATORY EXPERIENCE. TOPICS INCLUDED ARE FIELD TECHNIQUES, TAXONOMY, TERRESTRIAL AND AQUATIC COMMUNITIES AND SUCCESSION, STRUCTURE AND FUNCTION OF ECOSYSTEMS, POPULATION STUDIES, BEHAVIOR STUDIES, AND PROJECTS FOR FIELD STUDY. MANY EXAMPLES OF DATA SHEETS AND OUTLINES FOR FIELD NOTES ARE ILLUSTRATED. SUGGESTIONS ARE PROVIDED FOR SELECTING AND COMPLETING A PROJECT. REFERENCES ARE CITED FOR EACH TOPIC, AND A SELECTED BIOLOGY BIBLIOGRAPHY APPEARS AT THE END OF THE MANUAL.

GRADE: 7-8

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Marine Science Project Cards

AUTHOR: Dr. John N. Fleming

PUBLISHER: The Center for Applied Research in Education

COPYRIGHT: 1978

PRICE: $7.95 (25 cards and a Teacher's Guide)

SBN NUMBER: 0-87628-662-7

SPECIAL INSTRUCTIONS: This set of project cards is part of a series that includes sets with the following titles: Biology Project Cards, Chemistry Project Cards, Earth Science Project Cards, Environmental Science Project Cards, Marine Science Project Cards, Physics Project Cards, and Psychology Project Cards.

The Teacher's Guide for each set describes the individual unit, lists necessary materials, suggests specific procedures, discusses safety precautions, provides answers, and suggests areas for review and further study.

Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

(PAGE 1 OF 2)

DESCRIPTION: EACH ACTIVITY CARD , APPROXIMATELY 15 CM X 23 CM, IS ON A SINGLE CONCEPT AND PROVIDES QUESTIONS FOR INQUIRY, LISTS OF MATERIALS, PROCEDURES, IDEAS FOR PRESENTING RESULTS, AND SUGGESTIONS FOR FURTHER STUDY.

THE 25 ACTIVITIES IN THIS SET INCLUDE CULTURING AND OBSERVING MARINE BACTERIA, TIDES, WAVES, SKELETONS, LEARNING BEHAVIOR, POLLUTION, FISH SCALES, ANALYSIS OF SEA WATER, THE SEA FLOOR, AND CONSTRUCTION OF AN OCEANOGRAPHER'S TOOLS.

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GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: The Microscope and How to Use It

AUTHOR: Dr. George Stehli

PUBLISHER: Sterling Publishing Co.

COPYRIGHT: 1960

PRICE: $2.95 (157 pages)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Some of the activities require the use of laboratory materials and procedures which should be used only under the supervision of a qualified adult.

DESCRIPTION: Procedures are presented for using a microscope (and auxiliary tools) and for preparing slides. Operational problems in the procedures are discussed at the point at which they normally arise. This book is designed for independent work.

Topics covered include the microscopic structure of plants and animals, bacteria, microphotography, and the use of a microtome (a precision instrument for preparing thin sections of specimens). An index is included.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: MICROSCOPIC ANIMALS AND PLANTS

AUTHOR: DOROTHY HINSHAW PATENT

PUBLISHER: HOLIDAY HOUSE

COPYRIGHT: 1974

PRICE: $6.95 (160 PAGES)

SBN NUMBER: 0-8234-0247-9

DESCRIPTION: INCLUDED ARE PRACTICAL INSTRUCTIONS ON HOW TO USE A MICROSCOPE AND COLLECT AND CULTURE MICROSCOPIC ORGANISMS. THE OBSERVATION OF ONE-CELLED AND MANY-CELLED PLANTS AND ANIMALS, INVESTIGATIONS, AND PROJECTS ARE PRESENTED. A LSIT OF SUPPLY HOUSES, SUGGESTED READINGS, AND AN INDEX ARE INCLUDED.

GRADE: 3-6

TOPIC: ENERGY, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: MORE BRAIN BOOSTERS

AUTHOR: DAVID WEBSTER

PUBLISHER: DOUBLEDAY AND CO.

COPYRIGHT: 1975

PRICE: $5.95 (127 PAGES)

SBN NUMBER: 0-385-02091-0

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE USED UNDER THE SUPERVISION OF A QUALIFIED ADULT.

DESCRIPTION: PUZZLES, RIDDLES, AND INVESTIGATIONS ARE PRESENTED AND ANSWERS ARE PROVIDED. THE ACTIVITIES ARE GROUPED INTO SECTIONS SUCH AS SHADOWS, MYSTERY PHOTOS, BUBBLES AND DROPS, BALLOONS, FREEZING AND MELTING ICE, WATER, NOISE, KITCHEN CHEMISTRY, FUN WITH SHAPES, BULBS AND BATTERIES, FUN WITH NUMBERS, FUNNY TREES, EXPERIMENTS ON YOU, AND JUST FOR FUN.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: MORSE, MARCONI AND YOU

AUTHOR: IRWIN MATH

PUBLISHER: SCRIBNER

COPYRIGHT: 1979

PRICE: $8.95 (80 PAGES)

SBN NUMBER: 0-684-16081-1

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: DISCUSSIONS OF VARIOUS COMMUNICATION DEVICES WITH PICTURES AND DIAGRAMS THAT SHOW HOW TO BUILD THEM ARE PROVIDED. INCLUDED ARE DISCUSSIONS ON THE HISTORY AND EARLY DEVELOPMENT OF THE TELEPHONE, THE TELEGRAPH, AND WIRELESS TRANSMISSION. ALSO DISCUSSED ARE THE USES OF MAGNETS, METALS, AND VIBRATIONAL WAVES TO PRODUCE AND CARRY SOUND. PROJECTS INCLUDE THE TELEGRAPH, TELEPHONE, RADIO, SHORTWAVE RECEIVER, AND RADIO TRANSMITTER. A LIST OF BOOKS FOR FURTHER READING AND AN INDEX ARE PROVIDED. DRY CELLS ARE USED, NOT HOUSEHOLD CURRENT.

Grade: 3-6

Topic: ENERGY

Category: PROJECT IDEAS

Title: Motors and Engines and How They Work

Author: Harvey Weiss

Publisher: Thomas Y. Crowell

Copyright: 1969

Price: $7.95 (62 pages)

SBN Number: 0-690-56478-3

Special Instructions: Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

Description: Principles of engines and motors are discussed and precise instructions and diagrams are given for building models. Included are water wheels, windmills, sails, gravity machines, spring-wound engines, steam engines, steam turbines, electric motors, gasoline engines, diesel engines, jet and rocket engines, and solar engines.

GRADE: 5-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: MOVING RIGHT ALONG: A BOOK OF SCIENCE EXPERIMENTS AND PUZZLES ABOUT MOTION

AUTHOR: ROBERT GARDNER AND DAVID WEBSTER

PUBLISHER: DOUBLEDAY AND CO.

COPYRIGHT: 1978

PRICE: $7.90 (165 PAGES)

SBN NUMBER: 0-385-11642-X

DESCRIPTION: A NUMBER OF EXPERIMENTS AND ACTIVITIES ARE SUGGESTED THAT DEMONSTRATE THE SCIENCE OF MOTION. THEY ARE ILLUSTRATED WITH LINE DRAWINGS AND PHOTOGRAPHS. MATERIALS NECESSARY TO COMPLETE THE EXPERIMENTS ARE READILY AVAILABLE. INCLUDED ARE MOTION PUZZLES AND INVESTIGATIONS FOR STUDYING SPEED AND LOCOMOTION. AN INDEX IS PROVIDED. THE BOOK INCLUDES A DETAILED ACCOUNT OF THE FIRST MOON LANDING. INFORMATION ABOUT GRAVITY ON EARTH AND THE MOON IS ALSO INCLUDED.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: New Ideas for Science Fair Projects

AUTHOR: Roger Williams Sawyer and Robert A. Farmer

PUBLISHER: Arco Publishing Co.

COPYRIGHT: 1967

PRICE: $6.95

SBN NUMBER: 0-668-01538-1

DESCRIPTION: Comprehensive information is provided for participating in a local, regional, or national science fair. In addition, planning and developing a science fair project are discussed. Personalized accounts of actual projects and their development are described by former student winners of national fairs.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: New Unesco Source Book for Science Teachers

AUTHOR: None Given

PUBLISHER: The Unesco Press

COPYRIGHT: 1973

PRICE: $12.00 (270 pages)

SBN NUMBER: 92-3-201058-5

SPECIAL INSTRUCTIONS: Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: This is a revised edition of a book originally prepared to help teachers who did not have access to science supplies and equipment. Most of the activities use inexpensive or readily available materials. A student might use this book as a source of project ideas.

Over 500 investigations in the physical, biological, earth, and space sciences are described. Seventy activities and projects related to constructing tools and equipment useful for scientific investigations are included. Each description

(PAGE 1 OF 2)

LISTS NECESSARY MATERIALS, PROCEDURES, EXPECTED RESULTS, AND A SHORT EXPLANATION OF THE UNDERLYING SCIENTIFIC PRINCIPLES. THE APPENDIXES CONTAIN MEASUREMENT UNITS, MEASUREMENT CONVERSION CHARTS, THE PERIODIC TABLE, INFORMATION ON ELEMENTS, ACID-BASE INDICATORS, A RELATIVE HUMIDITY CHART, EQUIVALENT TEMPERATURES FOR DIFFERENT SCALES, A LOGARITHMIC TABLE, A LOGARITHMIC GRAPH, AND DIAGRAMS OF MEASUREMENT TOOLS. AN INDEX IS PROVIDED.

GRADE: 3-6

TOPIC: LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: THE NEW WATER BOOK

AUTHOR: MELVIN BERGER

PUBLISHER: THOMAS Y. CROWELL

COPYRIGHT: 1973

PRICE: $5.95 (111 PAGES)

SBN NUMBER: 690581467

DESCRIPTION: THIS BOOK INCLUDES BASIC INFORMATION ON THE WATER MOLECULE, PROPERTIES OF WATER, AND THE ROLE OF WATER IN THE LIFE CYCLE OF PLANTS AND ANIMALS. IT CONCLUDES WITH A THOROUGH EXPLORATION OF VARIOUS SOURCES AND TYPES OF WATER POLLUTION. ACTIVITIES AND PROJECT IDEAS ARE SCATTERED THROUGHOUT THE CHAPTERS.

INCLUDED ARE AN ANNOTATED LIST OF SUGGESTED BOOKS FOR FURTHER STUDY AND AN INDEX.

GRADE: 3-6

TOPIC: ENERGY, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: NOISE, NOISE, NOISE!

AUTHOR: JERRY GREY

PUBLISHER: WESTMINSTER PRESS

COPYRIGHT: 1975

PRICE: $5.35 (104 PAGES)

SBN NUMBER: 0-664-32575-0

DESCRIPTION: THE PRINCIPLES OF SOUND AND HEARING, THE ROLE OF NOISE IN EVERYDAY LIFE, AND THE CONSEQUENCE OF NOISE POLLUTION AND WHAT CAN BE DONE ABOUT IT ARE DISCUSSED. INCLUDED ARE INVESTIGATIONS THAT ILLUSTRATE THE PRINCIPLES OF SOUND, A GLOSSARY, BIBLIOGRAPHY, AND AN INDEX. THE INVESTIGATIONS REQUIRE COMMON HOUSEHOLD ITEMS.

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Pets in a Jar

AUTHOR: Seymour Simon

PUBLISHER: Viking Press

COPYRIGHT: 1975

PRICE: $6.95 (95 pages)

SBN NUMBER: 0-670-55060-4

DESCRIPTION: Suggestions are provided for collecting and keeping small animal pets such as hydras, pond snails, worms, ants, butterflies, crickets, and starfish. Included are a bibliography and an index.

GRADE: 7-8

TOPIC: ENERGY, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Physical Science Skillcards

AUTHOR: Otho E. Perkins and Robert E. McNemar

PUBLISHER: Charles E. Merrill Publishing Co.

COPYRIGHT: 1969

PRICE: $12.00 (72 cards)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Some of the activities require the use of chemicals, other materials, or procedures which should be used under the supervision of a qualified adult.

DESCRIPTION: The package consists of 72 skillcards, each with an investigation in physical science. The investigations could be useful for independent study activities. Each skillcard contains five sections: a statement of the problem, the materials needed, procedure, observation, and conclusion. Included are investigations on simple machines, temperature, periodic motion, optics, electricity, magnetism, mixtures, solutions, physical properties, chemical reactions, acids, bases, salts, and qualitative analysis.

GRADE: 3-6

TOPIC: ENERGY, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Physics Experiments for Children

AUTHOR: Muriel Mandell

PUBLISHER: Dover Publications

COPYRIGHT: 1959

PRICE: $1.25 (96 pages, paper)

SBN NUMBER: 486-22033-8

SPECIAL INSTRUCTIONS: CAUTION: A few suggested activities require the use of a heat source or an open flame. These investigations should be conducted under adult supervision.

DESCRIPTION: This book is a reference for projects which demonstrate topics of air, water, mechanical energy and machines, heat, sound, light, magnetism, and electricity. Most of the equipment required for the demonstrations can be found around the house. An index is included.

GRADE: 4-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Physics Fundamentals Demonstration Set

AUTHOR: Julius Sumner Miller

PUBLISHER: Central Scientific Co.

COPYRIGHT: 1974

PRICE: $48.00

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: The teacher should read, in advance, the portion of the teacher's manual that applies to the activity selected. Some additional background knowledge may be necessary for the teacher to interpret the concepts described. The teacher should decide if it is appropriate for the student to use the materials and manual in independent study.

DESCRIPTION: This is a collection of toys which illustrate physics principles. A teacher's manual is included which describes the demonstrations and underlying principles.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Physics Project Cards

AUTHOR: Dr. Michael F. Fleming

PUBLISHER: The Center for Applied Research in Education, Inc.

COPYRIGHT: 1978

PRICE: $7.95 (25 cards and a Teacher's Guide)

SBN NUMBER: 0-87628-661-9

SPECIAL INSTRUCTIONS: This set of project cards is part of a series that includes sets with the following titles: Biology Project Cards, Chemistry Project Cards, Earth Science Project Cards, Environmental Science Project Cards, Marine Science Project Cards, Physics Project Cards, and Psychology Project Cards.

The Teacher's Guide for each set describes the individual unit, lists necessary materials, suggests specific procedures, discusses safety precautions, provides answers, and suggests areas for review and further study.

Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

(PAGE 1 OF 2)

DESCRIPTION: EACH ACTIVITY CARD, APPROXIMATELY 15 CM X 23 CM, IS ON A SINGLE CONCEPT AND PROVIDES QUESTIONS FOR INQUIRY, LISTS OF MATERIALS, PROCEDURES, IDEAS FOR PRESENTING RESULTS, AND SUGGESTIONS FOR FURTHER STUDY.

THE ACTIVITIES IN THIS SET INCLUDE CIRCUITS, ELECTRICITY, CLOUD CHAMBER, SIMPLE MACHINES, ILLUMINATION, MOTION, OPTICS, MAGNETISM, FORCES, AND GRAVITY.

(PAGE 2 OF 2)

GRADE: 3-4

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: PLAY WITH PLANTS, REV. ED.

AUTHOR: MILLICENT E. SELSAM

PUBLISHER: WILLIAM MORROW AND CO.

COPYRIGHT: 1978

PRICE: $5.95 (95 PAGES)

SBN NUMBER: 0-688-32166-6

DESCRIPTION: INCLUDED ARE IDEAS FOR GROWING PLANTS FROM READILY AVAILABLE SEEDS, BULBS, AND CUTTINGS; HOW PLANTS DEVELOP AND USE WATER; AND PLANT RESPONSES TO LIGHT AND OTHER STIMULI. THE INFORMATION PROVIDED MIGHT SUGGEST PROJECTS FOR INDEPENDENT STUDY. AN INDEX IS PROVIDED.

GRADE: 3-4

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: PROJECTS WITH AIR

AUTHOR: SEYMOUR SIMON

PUBLISHER: FRANKLIN WATTS, INC.

COPYRIGHT: 1975

PRICE: $4.90 (63 PAGES)

SBN NUMBER: 0-531-02807-0

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: INVESTIGATIONS INVOLVING AIR ARE DESCRIBED. EACH INVESTIGATION LISTS NECESSARY MATERIALS, PROCEDURES, SUGGESTIONS FOR VARIATIONS, AND BACKGROUND INFORMATION. THE ACTIVITIES VARY FROM EXPERIMENTS SHOWING THAT AIR OCCUPIES SPACE AND HAS WEIGHT TO DEMONSTRATIONS SHOWING OXYGEN IN THE AIR AND AIR POLLUTION. THE MATERIALS NEEDED ARE HOUSEHOLD OR READILY AVAILABLE ITEMS. INCLUDED ARE A LIST OF BOOKS FOR FURTHER READING AND AN INDEX.

GRADE: 3-4

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: PROJECTS WITH PLANTS

AUTHOR: SEYMOUR SIMON

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1973

PRICE: $4.90 (63 PAGES)

SBN NUMBER: 531-02649-3

DESCRIPTION: INCLUDED ARE PROJECTS DESIGNED TO REVEAL BASIC FACTS ABOUT PLANTS, THEIR GROWTH, AND THEIR NOURISHMENT. EXAMPLES OF TOPICS ARE THE NEEDS OF SEEDS, TEMPERATURE AND GERMINATION, PHOTOPERIODISM, LIGHT AND PLANT GROWTH, GROWING PLANTS WITHOUT SOIL, GROWTH CHEMICALS, AND INSECTIVOROUS PLANTS. SUGGESTIONS FOR FURTHER READING, A LIST OF SCIENTIFIC SUPPLY HOUSES, AND AN INDEX ARE PROVIDED.

GRADE: 3-6

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: RESEARCH IDEAS FOR YOUNG SCIENTISTS

AUTHOR: GEORGE BARR

PUBLISHER: McGRAW-HILL BOOK CO.

COPYRIGHT: 1958

PRICE: $6.50 (142 PAGES)

SBN NUMBER: 07-003803-1

DESCRIPTION: SCIENCE INVESTIGATIONS, WITH SUGGESTIONS FOR CARRYING THEM OUT, ARE PROVIDED. THE INVESTIGATIONS INVOLVE HOUSEHOLD ITEMS OR READILY AVAILABLE MATERIALS. EMPHASIS IS PLACED ON SCIENTIFIC CONTROL, RECORD KEEPING, CHART MAKING, AND RELATED PROCEDURES. TOPICS INCLUDE ELECTRICITY, MAGNETISM, TRANSPORTATION, SOUND, LIGHT, THE HUMAN BODY, WEATHER, WATER, INSECTS, PLANTS, DISTANCE, AND TIME. A LIST OF ADDITIONAL BOOKS FOR EACH SUBJECT AND AN INDEX ARE INCLUDED.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Research Problems in Biology (Second Edition) Series 1

AUTHOR: Biological Sciences Curriculum Study

PUBLISHER: Oxford University Press

COPYRIGHT: 1976

PRICE: $10.00 (221 pages)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Many of the research problems are sophisticated and involve technical information and equipment; they should be conducted under the guidance of a qualified adult.

DESCRIPTION: Forty-three investigations suitable for independent study or projects are described. Background information, suggested procedures, and references are provided. Topics include behavior, physiology, ecology, microbiology, and genetics.

Research Problems in Biology: Investigations for Students, Series 2 and Series 3 are companion volumes for this book.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: RESEARCH PROBLEMS IN BIOLOGY (SECOND EDITION) SERIES 2

AUTHOR: BIOLOGICAL SCIENCES CURRICULUM STUDY

PUBLISHER: OXFORD UNIVERSITY PRESS

COPYRIGHT: 1976

PRICE: $10.00 (215 PAGES)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: MANY OF THE RESEARCH PROBLEMS ARE SOPHISTICATED AND INVOLVE TECHNICAL INFORMATION AND EQUIPMENT; THEY SHOULD BE CONDUCTED UNDER THE GUIDANCE OF A QUALIFIED ADULT.

DESCRIPTION: FORTY-FOUR PROBLEMS SUITABLE FOR INDEPENDENT STUDY OR PROJECTS ARE DESCRIBED. BACKGROUND INFORMATION, SUGGESTED PROCEDURES, AND REFERENCES ARE PROVIDED. TOPICS INCLUDE BEHAVIOR, PHYSIOLOGY; ECOLOGY; GENETICS; AND GROWTH, FORM, AND DEVELOPMENT.

RESEARCH PROBLEMS IN BIOLOGY: INVESTIGATIONS FOR STUDENTS, SERIES 1 AND SERIES 3 ARE COMPANION VOLUMES FOR THIS BOOK.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: RESEARCH PROBLEMS IN BIOLOGY (SECOND EDITION) SERIES 3

AUTHOR: BIOLOGICAL SCIENCES CURRICULUM STUDY

PUBLISHER: OXFORD UNIVERSITY PRESS

COPYRIGHT: 1976

PRICE: $10.00 (225 PAGES)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: MANY OF THE RESEARCH PROBLEMS ARE SOPHISTICATED AND INVOLVE TECHNICAL INFORMATION AND EQUIPMENT; THEY SHOULD BE CONDUCTED UNDER THE GUIDANCE OF A QUALIFIED ADULT.

DESCRIPTION: FORTY-THREE PROBLEMS SUITABLE FOR INDEPENDENT STUDY OR PROJECTS ARE DESCRIBED. BACKGROUND INFORMATION, SUGGESTED PROCEDURES, AND REFERENCES ARE PROVIDED. TOPICS INCLUDE BEHAVIOR; PHYSIOLOGY, ECOLOGY, MICROBIOLOGY, GENETICS; AND GROWTH, FORM, AND DEVELOPMENT.

RESEARCH PROBLEMS IN BIOLOGY: INVESTIGATIONS FOR STUDENTS, SERIES 1 AND SERIES 2 ARE COMPANION VOLUMES FOR THIS BOOK.

GRADE: 3-5

TOPIC: ENERGY, MATTER

CATEGORY: PROJECT IDEAS

TITLE: Science Experiments and Amusements for Children

AUTHOR: Charles Vivian

PUBLISHER: Dover Publishers

COPYRIGHT: 1963

PRICE: $5.95 (96 pages, paper)

SBN NUMBER: 486-21856-2

SPECIAL INSTRUCTIONS: Some of the suggested activities require the use of household chemicals, sources of heat, or other materials and procedures which should be used under the supervision of a qualified adult.

DESCRIPTION: Seventy-three science investigations are presented. Each description includes a list of materials, procedures, and an explanation of the scientific principles involved. All but two investigations involve physical science, e.g., energy and matter. Activities include periscopes, boomerangs, electric motors, mirror writing, pulse indicators, and pinhole cameras. An index is included.

GRADE: 3-5

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER

CATEGORY: PROJECT IDEAS

TITLE: SCIENCE EXPERIMENTS YOU CAN EAT

AUTHOR: VICKI COBB

PUBLISHER: J.B. LIPPINCOTT

COPYRIGHT: 1972

PRICE: $6.95 (127 PAGES, PAPER)

SBN NUMBER: 397314876

SPECIAL INSTRUCTIONS: THIS BOOK IS AVAILABLE IN A SPANISH EDITION (SBN NUMBER 0-397-31350-2).

DESCRIPTION: RECIPES ARE DESCRIBED WHICH ARE SCIENCE INVESTIGATIONS DESIGNED TO ILLUSTRATE SPECIFIC SCIENTIFIC PRINCIPLES.

BASIC CONCEPTS SUCH AS SOLUTIONS, SUSPENSIONS, AND PRECIPITATES CAN BE DEMONSTRATED BY FOLLOWING THE RECIPES. TOPICS INCLUDE CARBOHYDRATES, FATS, PROTEINS, KITCHEN CHEMISTRY, PLANTS, MICROBES, AND ENZYMES.

ALL MATERIALS, INGREDIENTS, EQUIPMENT, AND PROCEDURES ARE LISTED. THE RESULTS OF EACH INVESTIGATION ARE DESCRIBED AND ANALYZED.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Science Fair Project Index: 1960-1972

AUTHOR: Janet Y. Stoffer, Editor

PUBLISHER: Scarecrow Press

COPYRIGHT: 1975

PRICE: $26.50 (728 pages)

SBN NUMBER: 0-8108-0783-1

DESCRIPTION: Hundreds of titles of science projects in many areas of science and technology are listed and indexed alphabetically by topics based on the Library of Congress classification system. The topics range from absorption, acceleration, and acids to yeast, zinc, and zoology.

Each project is cross-referenced with a book cited in the bibliography.

This index may be useful as a source of project ideas for further investigation.

GRADE: 3-6

TOPIC: ENERGY, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Science in Your Own Backyard

AUTHOR: Elizabeth K. Cooper

PUBLISHER: Harcourt Brace Jovanovich

COPYRIGHT: 1958

PRICE: $5.00 (192 pages)

SBN NUMBER: None Given

DESCRIPTION: Backyard science investigations which use readily available materials are described and practical suggestions are given for establishing a laboratory. Other topics include soil and rocks, fossils, water, grass, flowers, plants from seeds, plants from spores, earthworms, snails, insects, spiders, birds, other vertebrate animals, clouds, weather, atmosphere, outer space, and stars. An index is included.

GRADE: 3-4

TOPIC: LIVING THINGS, MATTER

CATEGORY: PROJECT IDEAS

TITLE: SCIENCE MAGIC WITH CHEMISTRY AND BIOLOGY

AUTHOR: TED JOHNSTON

PUBLISHER: ARCO PUBLISHING CO.

COPYRIGHT: 1974

PRICE: $4.95 (61 PAGES)

SBN NUMBER: 0-668-03661-6

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, AND PROCEDURES WHICH SHOULD BE USED UNDER THE SUPERVISION OF A QUALIFIED ADULT.

DESCRIPTION: OVER 100 SCIENCE PROJECTS THAT USE HOUSEHOLD MATERIALS ARE PRESENTED WITH STEP-BY-STEP INSTRUCTIONS ILLUSTRATED WITH COLOR DRAWINGS. THE SCIENTIFIC PRINCIPLES ARE EXPLAINED. THE TOPICS EMPHASIZED ARE CHEMISTRY AND PLANT PHYSIOLOGY. ACTIVITIES INCLUDE CHROMATOGRAPHY, CAPILLARY ACTION, CRYSTALS, INVISIBLE INKS, ELECTROLYSIS, PLANT ROOTS, PLANT LEAVES, CHEMICAL INDICATORS, AND WATER VAPOR.

GRADE: 3-5

TOPIC: LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: SCIENCE PROJECTS WITH EGGS

AUTHOR: DAVID WEBSTER

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1976

PRICE: $4.90 (61 PAGES)

SBN NUMBER: 0-531-01212-3

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE USED UNDER THE SUPERVISION OF A QUALIFIED ADULT. THE HATCHING OF FERTILIZED EGGS IN A HOMEMADE INCUBATOR IS NOT RECOMMENDED UNLESS ADVANCE PROVISIONS ARE MADE FOR THE PROPER CARE AND RAISING OF THE HATCHED CHICKS.

DESCRIPTION: INCLUDED ARE SCIENCE PROJECTS DESIGNED TO HELP THE STUDENT UNDERSTAND THE STRUCTURES AND USES OF CHICKEN EGGS. THE INVESTIGATIONS ILLUSTRATE THE STRENGTH OF EGGS, COMPOSITION OF EGGS, EGG EXAMINATION, AND GRADING AND INCUBATION OF EGGS. AN INDEX IS INCLUDED.

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Science Projects for Elementary School Students

AUTHOR: None Given

PUBLISHER: The Oregon Museum of Science and Industry

COPYRIGHT: None Given

PRICE: $.50 (48 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: Science projects and procedures for conducting them are described. Projects are divided into five sections: chemistry, biology, astronomy, geology, and meteorology. A self-judging score sheet is provided to evaluate the completed project, and hints for the researcher are included. A list of published materials for obtaining project ideas is provided.

GRADE:	6-8
TOPIC:	LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE
CATEGORY:	PROJECT IDEAS

TITLE:	SCIENCE PROJECTS FOR JUNIOR AND SENIOR HIGH SCHOOL STUDENTS
AUTHOR:	NONE GIVEN
PUBLISHER:	OREGON MUSEUM OF SCIENCE AND INDUSTRY
COPYRIGHT:	NONE GIVEN
PRICE:	$.50 (48 PAGES, PAPER)
SBN NUMBER:	NONE GIVEN

DESCRIPTION: NUMEROUS IDEAS FOR SCIENCE PROJECTS ARE PROVIDED BY PRESENTING A QUESTION OR PROBLEM AND SUGGESTING PROCEDURES FOR INVESTIGATING THE PROBLEM. THE IDEAS ARE DIVIDED INTO SEVEN SECTIONS: ANTHROPOLOGY, BIOLOGY, CHEMISTRY, METEOROLOGY, ASTRONOMY, DENTAL SCIENCE, AND PHARMACEUTICAL SCIENCE. A SELF-JUDGING SCORE SHEET IS PROVIDED TO EVALUATE THE PROJECT, AND HINTS FOR THE RESEARCHER ARE INCLUDED. A LIST OF PUBLISHED MATERIALS FOR OBTAINING PROJECT IDEAS IS PROVIDED.

GRADE: 3-6

TOPIC: LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: SCIENCE PROJECTS IN ECOLOGY

AUTHOR: SEYMOUR SIMON

PUBLISHER: HOLIDAY HOUSE

COPYRIGHT: 1972

PRICE: $4.50 (127 PAGES)

SBN NUMBER: 8234-0204-5

DESCRIPTION: TWENTY PROJECTS USING INEXPENSIVE MATERIALS ARE DESCRIBED; PROJECTS MAY BE COMPLETED EITHER AT HOME OR IN THE CLASSROOM. BACKGROUND INFORMATION, DETAILED ILLUSTRATIONS, AND SIMPLE INSTRUCTIONS ARE PROVIDED. THIS BOOK INCLUDES BASIC CONCEPTS OF ECOLOGY AND THE STUDY OF LIVING THINGS IN THEIR ENVIRONMENT. ECOLOGICAL SETTINGS INCLUDE FOREST, WOODLAND, ROTTING LOG, DESERT, GRASS FIELD, POND, BOG, SOIL, AND A DROP OF WATER. OTHER TOPICS INCLUDE FOOD WEBS, WEEDS, PLANT SURVIVAL, CHEMICAL CYCLES, ANIMAL BEHAVIOR, AND ANIMAL SURVIVAL. A BIBLIOGRAPHY AND INDEX ARE INCLUDED.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: Science Projects with Electrons and Computers

AUTHOR: Alfred Bender

PUBLISHER: Arco Publishing Co.

COPYRIGHT: 1977

PRICE: $6.95 (139 pages)

SBN NUMBER: 0-688-04429-2

DESCRIPTION: Over fifty projects on electrons and computers are described. Topics include generating electricity, batteries, electroplating, magnetism, electromagnetism, resistance, electricity from heat, electricity from light, and computers. Included are detailed instructions and lists of necessary materials. Except for a few simple meters, the equipment is home-constructed or inexpensive. The energy source is dry cell batteries, not household current.

GRADE: 4

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Science Projects: Mirrors

AUTHOR: Hy Ruchlis

PUBLISHER: Book-Lab

COPYRIGHT: 1968

PRICE: $1.60 (48 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: Twenty-nine investigations and additional activities that use mirrors are described. The materials needed include mirrors and common household supplies. Each description includes instructions and a brief explanation of the phenomenon.

GRADE: 3-6

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Science Projects You Can Do

AUTHOR: George K. Stone

PUBLISHER: Prentice-Hall

COPYRIGHT: 1963

PRICE: $5.25 (101 pages)

SBN NUMBER: None Given

DESCRIPTION: Information is provided for the student who wants to choose, plan, and develop science projects. The investigations range from simple to complex. The following topics are included: body functions, animal responses, the nature of matter, earth science, mechanics, optics, solar science, the nature of electricity, electrical devices, plant growth, plant functions, and sound.

GRADE: 3-6

TOPIC: ENERGY, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: SCIENCE PUZZLERS

AUTHOR: MARTIN GARDNER

PUBLISHER: VIKING PRESS

COPYRIGHT: 1957

PRICE: $2.50 (126 PAGES, PAPER)

SBN NUMBER: 670621137

DESCRIPTION: SCIENCE INVESTIGATIONS ARE DESCRIBED WHICH REQUIRE MATERIALS AND EQUIPMENT THAT CAN BE FOUND IN THE HOME. THE ACTIVITIES ARE SELECTED FOR THEIR MOTIVATIONAL PROPERTIES AND INSTRUCTIONAL POTENTIAL. FOR EACH INVESTIGATION THE NECESSARY MATERIALS ARE DESCRIBED, THE PROCEDURE IS DISCUSSED, AND THE UNDERLYING PRINCIPLE IS EXPLAINED. INCLUDED IS A LIST OF SELECTED REFERENCES FOR FURTHER STUDY. THE BOOK CONTAINS FIVE CHAPTERS DEALING WITH MATHEMATICAL PUZZLES. HOWEVER, MOST ACTIVITIES ARE FOR TOPICS SUCH AS ASTRONOMY, CHEMISTRY, PHYSIOLOGY, LIGHT, GRAVITY, STATIC ELECTRICITY, MECHANICS, AIR, HEAT, SOUND, AND INERTIA.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: THE SCIENTIFIC AMERICAN BOOK OF PROJECTS FOR THE AMATEUR SCIENTIST

AUTHOR: C.L. STONG

PUBLISHER: SIMON AND SCHUSTER

COPYRIGHT: 1960

PRICE: $6.95 (584 PAGES, PAPER)

SBN NUMBER: 671-20747-4

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

"AMATEUR ROCKETRY," PAGES 447 TO 480, CITES ROCKETS THAT USE SOLID FUEL PROPELLANT. USE OF THESE ROCKETS IS PROHIBITED IN MONGTOMERY COUNTY PUBLIC SCHOOLS (SAFETY HANDBOOK, MCPS, JULY 1971, PAGE 129).

DESCRIPTION: INCLUDED ARE INVESTIGATIONS, CONSTRUCTIONS, AND OTHER ACTIVITIES IN ASTRONOMY, ARCHAEOLOGY, BIOLOGY, THE NATURAL SCIENCES, THE EARTH SCIENCES, MATHEMATICS, AERODYNAMICS, OPTICS, HEAT, AND ELECTRONICS.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Selected Experiments and Projects ... from Edison

AUTHOR: Robert F. Schultz

PUBLISHER: Thomas Alva Edison Foundation

COPYRIGHT: 1976

PRICE: $.50 (32 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be ordered from the Thomas Alva Edison Foundation, Cambridge Office Plaza, Suite 143, 18280 West Ten Mile Road, Southfield, Michigan 48075.

DESCRIPTION: Ten investigations with lists of materials and descriptions of procedures are presented. Each investigation is preceded by a discussion of background information and underlying scientific principles. The investigations include a model phonograph, magnetic relay switch, electric drawer lock, counterfeit coin detector, apparatus for demonstrating persistence of vision, pinhole camera, model electric light, conductivity tester, burglar alarm, and electric motor. Except for the use of a phonograph, all activities use dry cells, not household current.

GRADE: 3-6

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: SHELF PETS: HOW TO TAKE CARE OF SMALL WILD ANIMALS

AUTHOR: EDWARD R. RICCIUTI

PUBLISHER: HARPER AND ROW

COPYRIGHT: 1971

PRICE: $5.79 (132 PAGES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THIS BOOK DESCRIBES HOW TO OBTAIN A NEW PET. READERS ARE CAUTIONED TO CONSIDER THE KIND OF PET, THE LENGTH OF TIME THE PET IS EXPECTED TO BE KEPT, THE SPACE AND FOOD REQUIREMENTS OF A GIVEN PET, AND PLANS FOR PROVIDING FOR THE PET WHEN IT IS NO LONGER NEEDED OR WANTED. PRACTICAL ADVICE IS INCLUDED ON EACH OF THE PREVIOUSLY LISTED ITEMS. A VARIETY OF WILD ANIMALS ARE DISCUSSED: FROGS, TOADS, SALAMANDERS, SNAKES, LIZARDS, TURTLES, SPIDERS, CRAYFISH, WATER STRIDERS, WHIRLIGIG BEETLES, CATERPILLARS, CRICKETS, GRASSHOPPERS, KATYDIDS, MILLIPEDES, GUPPIES, SIAMESE FIGHTING FISH, WATER AND LAND SNAILS, HAMSTERS, AND GUINEA PIGS.

A LIST OF RECOMMENDED BOOKS AND AN INDEX ARE INCLUDED.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Silent Wings

AUTHOR: Kristine Cox Levin

PUBLISHER: Pruett Publishing Co.

COPYRIGHT: 1977

PRICE: $5.00 (100 pages, paper)

SBN NUMBER: 0-87108-193-8

DESCRIPTION: This book is divided into four parts: "Building Paper Airplanes," "Building Balsa Gliders," "Air and Forces Acting on Planes and Gliders," and "Development of the Glider Club." The first two parts provide background information and suggestions for investigating and building paper and balsa gliders. An effort is made to introduce terms and define their meanings. The third part provides a variety of investigations on air, pressure, forces, airfoils, gravity, air currents, and center of gravity. The last part describes the development of a glider club in a school. Lists of suggested readings and addresses for obtaining additional information are provided. A glossary is included.

GRADE: 7-8

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: SOLAR ENERGY EXPERIMENTS

AUTHOR: THOMAS W. NORTON

PUBLISHER: RODALE PRESS

COPYRIGHT: 1977

PRICE: $5.95 (129 PAGES, PAPER)

SBN NUMBER: 0-87857-179-5

DESCRIPTION: NINETEEN INVESTIGATIONS AND EIGHT ACTIVITIES DEALING WITH SOLAR ENERGY ARE DESCRIBED. TOPICS INCLUDE ALTITUDE AND AZIMUTH OF THE SUN, RADIATION USING LENSES TO COLLECT ENERGY, AIR AND WATER SOLAR COLLECTORS, AND ENERGY STORAGE. EACH DESCRIPTION IS COMPOSED OF AN OBJECTIVE, AN INTRODUCTION, A LIST OF MATERIALS, AND A PROCEDURE. SOME DESCRIPTIONS CONTAIN REFERENCES, HINTS FOR ANALYZING THE DATA, AND DISCUSSION QUESTIONS . SOME OF THE MATERIALS ARE AVAILABLE IN SCHOOL LABORATORIES, AND OTHERS ARE COMMON AND EASILY OBTAINABLE. THE APPENDIXES CONTAIN A GLOSSARY, ENERGY CONVERSION FACTORS, TEMPERATURE-SCALE COMPARISON CHARTS, SOLAR POSITION AND INTENSITY DATA, DATA ON THERMAL RESISTANCE OF BUILDING MATERIALS, DENSITY OF AIR AT VARIOUS TEMPERATURES AND PRESSURES, AND SUGGESTIONS FOR FURTHER READING. AN INDEX IS PROVIDED.

GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: Task Oriented Physical Science (TOPS): Analysis

AUTHOR: Ron Marson

PUBLISHER: Ron Marson

COPYRIGHT: 1979

PRICE: Task card set, $1.00; Teacher's manual, $3.00

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: All materials must be ordered from the author/publisher:
Ron Marson, 865 Shelsteve Terrace, Vista, California 92083.

A free "Operations Manual" should be requested when an order for the materials is placed. The "Operations Manual" suggests general procedures for using the materials.

A separate "Teacher's Manual" should be ordered for each subject matter unit. Each unit can be ordered separately.

The investigations do not require special materials.

(PAGE 1 OF 2)

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 X 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

THE ACTIVITIES IN THE "ANALYSIS" UNIT ARE DESIGNED TO IMPROVE A STUDENT'S ANALYTICAL SKILLS. INCLUDED ARE INSTRUCTIONS ON HOW TO INTERPRET AND CONSTRUCT FLOW CHART INSTRUCTIONS, THE SEPARATION OF MATTER, THE CONSTRUCTION OF A DATA TABLE, QUALITATIVE ANALYSIS, TITRATION, ACID-BASE NEUTRALIZATION, AND THE EVALUATION OF ADVERTISING CLAIMS.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): COHESION AND ADHESION

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.65; TEACHER'S MANUAL, $3.30

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 x 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "COHESION AND ADHESION" UNIT ARE INVESTIGATIONS AND EXPLANATIONS OF COHESION, ADHESION, SURFACE TENSION, CAPILLARY ACTION, AND CHROMATOGRAPHY.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): ELECTRICITY

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.40; TEACHER'S MANUAL, $4.20

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x [illegible] inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Electricity" unit are investigations on the principles of electricity as they apply to circuits, wet and dry cells, conductors, insulators, semiconductors, resistance, switches, fuses, interactions of electric charges, induction, sources of electricity, motors and generators, and copper plating.

GRADE: 5-7

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): FLOATING AND SINKING

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.20; TEACHER'S MANUAL, $3.60

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 x 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "FLOATING AND SINKING" UNIT ARE ACTIVITIES AND INVESTIGATIONS ON THE RELATIONSHIP OF WEIGHT, VOLUME, MASS, AND DENSITY; GRAPHICAL REPRESENTATIONS OF DENSITY RELATIONSHIPS; COMPUTATION AND COMPARISON OF VOLUME AND DENSITY MEASURES FOR SEVERAL READILY AVAILABLE OBJECTS; ARCHIMEDES' PRINCIPLE; THE CONSTRUCTION AND USE OF A HYDROMETER; AND BUOYANCY.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Task Oriented Physical Science (TOPS): Heat

AUTHOR: Ron Marson

PUBLISHER: Ron Marson

COPYRIGHT: 1979

PRICE: Task card set, $1.20; Teacher's manual, $2.40

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: All materials must be ordered from the author/publisher:
Ron Marson, 865 Shelsteve Terrace, Vista, California 92083.

A free "Operations Manual" should be requested when an order for the materials is placed. The "Operations Manual" suggests general procedures for using the materials.

A separate "Teacher's Manual" should be ordered for each subject matter unit. Each unit can be ordered separately.

The investigations do not require special materials.

(PAGE 1 OF 2)

Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Heat" unit are explanations and investigations of the principles of heat. Conduction, convection, radiation, heat absorption and insulation, convection currents, and the measurement of heat content are presented.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS):
KINETIC MODEL

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.35; TEACHER'S MANUAL, $2.70

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 X 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "KINETIC MODEL" UNIT ARE INVESTIGATIONS AND EXPLANATIONS OF MOLECULAR MOTION, EXPANSION AND CONTRACTION, RATES OF THERMAL EXPANSION, INTERMOLECULAR BOND STRENGTH AND ITS RELATIONSHIP TO MELTING TEMPERATURE, EVAPORATION, AND CONDENSATION.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): LIGHT

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.60; TEACHER'S MANUAL, $4.80

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

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THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

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INCLUDED IN THE "LIGHT" UNIT ARE INVESTIGATIONS ON THE PRINCIPLES OF LIGHT AS THEY APPLY TO REFLECTION, REFRACTION, OPTICAL ILLUSIONS, ANGLES OF INCIDENCE AND REFLECTION, TRANSMISSION, AND SPECTRA. SEVERAL INVESTIGATIONS ARE INCLUDED THAT WILL HELP THE STUDENT STUDY THE CHARACTERISTICS AND USES OF LENSES.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Task Oriented Physical Science (TOPS): Machines

AUTHOR: Ron Marson

PUBLISHER: Ron Marson

COPYRIGHT: 1979

PRICE: Task card set, $1.20; Teacher's manual, $2.20

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: All materials must be ordered from the author/publisher: Ron Marson, 865 Shelsteve Terrace, Vista, California 92083.

A free "Operations Manual" should be requested when an order for the materials is placed. The "Operations Manual" suggests general procedures for using the materials.

A separate "Teacher's Manual" should be ordered for each subject matter unit. Each unit can be ordered separately.

The investigations do not require special materials.

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 x 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

THE PRINCIPLES OF SIMPLE MACHINES AND RELATED CONCEPTS ARE PROVIDED. INCLUDED ARE LEVERS, PULLEYS, INCLINED PLANES, THE DEFINITION OF WORK, AND THE CONCEPTS OF IDEAL MECHANICAL ADVANTAGE AND HORSEPOWER.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): MAGNETISM

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.20; TEACHER'S MANUAL, $3.60

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

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THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

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DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Magnetism" unit are investigations that illustrate the principles of magnetism and electromagnetism. The principles are applied to building a simple electric motor, telegraph, and buzzer.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): MOTION

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $2.40; TEACHER'S MANUAL, $4.80

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

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(PAGE 1 OF 2)

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Included in the "Motion" unit are investigations on the study of uniform motion; inertia; gravity; the relationships of acceleration, gravity, and time; and perpetual motion. A model of an orbiting satellite and models for Newton's laws of motion are presented.

GRADE: 5-7

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: Task Oriented Physical Science (TOPS):
Oxidation

AUTHOR: Ron Marson

PUBLISHER: Ron Marson

COPYRIGHT: 1979

PRICE: Task card set, $.95; Teacher's manual, $2.85

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: All materials must be ordered from the author/publisher:
Ron Marson, 865 Shelsteve Terrace, Vista, California 92083.

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The investigations do not require special materials.

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SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 X 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "OXIDATION" UNIT ARE INVESTIGATIONS AND EXPERIMENTS ON OXIDATION. RUSTING AND BURNING ARE USED TO ILLUSTRATE OXIDATION PRINCIPLES.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): PENDULUMS

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $.80; TEACHER'S MANUAL, $2.40

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

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DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 x 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "PENDULUMS" UNIT ARE THE RELATIONSHIPS OF LENGTH, AMPLITUDE, FREQUENCY, AND BOB WEIGHT FOR A PENDULUM. SCIENCE PROCESSES AND RELATED MATHEMATICAL SKILLS CAN BE DEVELOPED BY COMPLETING THE UNIT.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Task Oriented Physical Science (TOPS):
Pressure

AUTHOR: Ron Marson

PUBLISHER: Ron Marson

COPYRIGHT: 1979

PRICE: Task card set, $1.50; Teacher's manual, $3.00

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: All materials must be ordered from the author/publisher:
Ron Marson, 865 Shelsteve Terrace, Vista, California 92083.

A free "Operations Manual" should be requested when an order for the materials is placed. The "Operations Manual" suggests general procedures for using the materials.

A separate "Teacher's Manual" should be ordered for each subject matter unit. Each unit can be ordered separately.

The investigations do not require special materials.

(PAGE 1 OF 2)

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Pressure" unit are the definitions, explanations of the physical principles and investigations associated with fluid pressure. The interrelationships among force, pressure, and area; Bernoulli's Principle; and the relationships of fluid pressure and fluid flow are explained. The principles are illustrated by detailed explanations of how to build a working model of a water pump and a siphon system.

GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): PROBABILITY

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.80; TEACHER'S MANUAL, $3.60

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 x 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "PROBABILITY" UNIT ARE INVESTIGATIONS THAT ILLUSTRATE SOME BASIC CONCEPTS OF MATHEMATICAL PROBABILITY.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: MATTER

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS):
SOLUTIONS

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.80; TEACHER'S MANUAL, $3.60

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING, "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 X 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "SOLUTIONS" UNIT ARE EXPLANATIONS AND INVESTIGATIONS RELATED TO SOLUTIONS AND THEIR PROPERTIES. THE CONCEPTS INCLUDED ARE TRUE SOLUTIONS, COLLOIDAL SUSPENSION, COARSE SEPARATION, COAGULATION, SOLVENCY, THE RELATIONSHIP OF SOLUBILITY AND TEMPERATURE, HYDRATION, WATER OF HYDRATION, SOIL ANALYSIS, WATER ANALYSIS, AND CRYSTAL GROWING.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): SOUND

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $.80; TEACHER'S MANUAL, $2.40

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 x 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "SOUND" UNIT ARE ACTIVITIES AND INVESTIGATIONS ON THE SOURCES, INTENSITY, AND PITCH OF SOUND; SOUND MEDIUMS; FREQUENCY; RESONANCE; AND THE SPEED OF SOUND.

GRADE: 3-5

TOPIC: ENERGY, LIVING THINGS, MATTER

CATEGORY: PROJECT IDEAS

TITLE: TASTY ADVENTURES IN SCIENCE

AUTHOR: SALLY FOX

PUBLISHER: LANTERN PRESS

COPYRIGHT: 1963

PRICE: $2.95 (63 PAGES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: FORTY-THREE INVESTIGATIONS USING COMMON HOUSEHOLD MATERIALS ARE DESCRIBED. TOPICS INCLUDE MATTER, ENERGY, FORCES, CHEMISTRY, AND LIVING THINGS. ALL OF THE INVESTIGATIONS USE FOOD TO ILLUSTRATE SCIENTIFIC PRINCIPLES. FOR EACH INVESTIGATION A LIST OF MATERIALS, INSTRUCTIONS, AND A DISCUSSION OF THE UNDERLYING PRINCIPLES ARE PROVIDED.

GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: Thousands of Science Projects

AUTHOR: None Given

PUBLISHER: Science Service

COPYRIGHT: 1971

PRICE: $1.00 (63 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: The titles of projects entered in the International Science and Engineering Fair or in the Science Talent Search for the Westinghouse Science Scholarships and Awards are listed and categorized according to the Library of Congress classification system. The listing might be used to suggest ideas for projects. The titles are divided into the various fields of science and engineering. Only project titles are given; directions, plans and further information on the specific projects are not available.

GRADE: 3-6

TOPIC: ENERGY

CATEGORY: PROJECT IDEAS

TITLE: Tricks of Eye and Mind: The Story of Optical Illusion

AUTHOR: Larry Kettelkamp

PUBLISHER: William Morrow and Co.

COPYRIGHT: 1974

PRICE: $5.25 (127 pages)

SBN NUMBER: 688318290

DESCRIPTION: Illustrations and discussions of underlying principles of optical illusions are presented. The functions of the human eye are discussed and related to the way optical illustrations are perceived. Practical uses of illusions in films, camouflage, and art are included; these may be useful as project ideas. An index is included.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: TROPICAL MARINE AQUARIA, REV. ED.

AUTHOR: GRAHAM F. COX

PUBLISHER: GROSSET AND DUNLAP

COPYRIGHT: 1974

PRICE: $6.99 (160 PAGES)

SBN NUMBER: 0-448-13200-1

DESCRIPTION: EXPLANATIONS ARE PROVIDED ABOUT WAYS TO ESTABLISH AND MAINTAIN A TROPICAL MARINE AQUARIUM AT HOME. OVER 100 AQUATIC SPECIES ARE DESCRIBED. INCLUDED ARE 185 FULL-COLOR ILLUSTRATIONS, HINTS FOR THE BEGINNER, A LIST OF OTHER BOOKS TO READ, PLACES TO VISIT, AND AN INDEX.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Tropical Saltwater Aquariums: How to Set Them Up and Keep Them Going

AUTHOR: Seymour Simon

PUBLISHER: Viking Press

COPYRIGHT: 1976

PRICE: $6.95 (90 pages)

SBN NUMBER: 670-73191-9

DESCRIPTION: Information and directions are given for establishing and maintaining a saltwater aquarium. Topics include water conditions, introducing new animals, foods and feeding, and health of the aquarium. A list of books and periodicals for further reading and and an index are included.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: TURTOX SERVICE LEAFLETS, NEW SERIES

AUTHOR: NONE GIVEN

PUBLISHER: MACMILLAN SCIENCE CO.

COPYRIGHT: 1974

PRICE: $3.95, SET OF 21 LEAFLETS; $.20, EACH LEAFLET

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THERE ARE 21 SEPARATE TITLES IN THE NEW SERIES. EACH DESCRIBES A SINGLE BIOLOGICAL TOPIC IN A TWO- OR FOUR-PAGE LEAFLET. PRACTICAL INFORMATION AND PROCEDURES FOR MAINTAINING A PARTICULAR PLANT OR ANIMAL OR METHODS FOR CONDUCTING A SCIENTIFIC ACTIVITY ARE DESCRIBED FOR EACH TOPIC. THESE CAN BE USEFUL AS SOURCES OF PROJECT IDEAS AS WELL AS BASIC SCIENCE LABORATORY TECHNIQUES. SOME EXAMPLES OF THE WIDE VARIETY OF BIOLOGICAL TOPICS ARE "BASIC MEASUREMENTS IN BIOLOGY LABORATORY," "THE SCHOOL TERRARIUM," "GETTING TO KNOW THE BRINE SHRIMP," AND "PRESENTING THE VINEGAR EEL AS A STUDY SPECIMEN." THIS IS A COMPANION SET TO TURTOX LEAFLETS, ORIGINAL SERIES.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Turtox Service Leaflets, Original Series

AUTHOR: None Given

PUBLISHER: MacMillan Science Co.

COPYRIGHT: 1958-1977

PRICE: $6.50, set of 50 leaflets; $.20, each leaflet

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.

Some activities could result in the inhumane treatment of animals and are not recommended. Any activity involving pain or discomfort that is not a part of the animal's natural environment or results in the death of the animal should not be done. Specifically, the procedures found in Leaflet Number 21, "Preparation, Injection and Care of Embalmed Specimens," are NOT recommended.

(PAGE 1 OF 2)

DESCRIPTION: THERE ARE 50 SEPARATE TITLES IN THE SET. EACH DESCRIBES A SINGLE BIOLOGICAL TOPIC IN A TWO- OR FOUR-PAGE LEAFLET. PRACTICAL INFORMATION AND PROCEDURES FOR MAINTAINING A PARTICULAR PLANT OR ANIMAL OR METHODS FOR CONDUCTING A SCIENTIFIC ACTIVITY ARE DESCRIBED FOR EACH TOPIC. THESE CAN BE USEFUL AS SOURCES OF PROJECT IDEAS AS WELL AS BASIC SCIENCE LABORATORY TECHNIQUES. SOME EXAMPLES OF THE WIDE VARIETY OF BIOLOGICAL TOPICS ARE "HOW TO MAKE AN INSECT COLLECTION," "INSECTIVOROUS PLANTS," "THE STUDY OF FOSSIL SPECIMENS," "STUDYING ANTS IN OBSERVATION NESTS," AND "PLANT AND ANIMAL HORMONE EXPERIMENTS." THIS IS A COMPANION SET TO TURTOX SERVICE LEAFLETS, NEW SERIES.

(PAGE 2 OF 2)

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS,
LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: Understanding Hydroponics: Growing Plants Without Soil

AUTHOR: George Sullivan

PUBLISHER: Frederick Warne

COPYRIGHT: 1976

PRICE: $6.95 (96 pages)

SBN NUMBER: 0-7232-6036-2

DESCRIPTION: Hydroponics, the science of growing plants in water without soil, is discussed. Included are chapters on the history of hydroponics, advantages and disadvantages of hydroponics, necessary tools, practical guidelines, growing vegetables, and instructions for mixing nutrient solutions. The appendix contains sources for further study, supplies, and organizations. A glossary and index are also provided.

GRADE: 6-8

TOPIC: UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: University of Illinois Astronomy Program

AUTHOR: J. Myron Atkin and Stanley P. Wyatt, Jr. (codirectors)

PUBLISHER: Harper and Row

COPYRIGHT: 1969

PRICE: $3.44 (Student's Manual), $2.24 (Teacher's Guide)
$34.08 (Complete set of manuals and guides for books 1-6)

SBN NUMBER: None Given

DESCRIPTION: The University of Illinois Astronomy Program is the final product of the Elementary-School Science Project, which was supported by the National Science Foundation.

This program is made up of six activity-oriented discovery units on astronomy. Each is in a separate student's book with a separate teacher's Guidebook. The book titles are Book 1 - Charting the Universe, Book 2 - The Universe in Motion, Book 3 - Gravitation, Book 4 - The Message of Starlight, Book 5 - The Life Story of a Star, and Book 6 - Galaxies and the Universe.

(PAGE 1 OF 2)

THE UNITS CONTAIN BACKGROUND INFORMATION, ACTIVITY DESCRIPTIONS, AND INSTRUCTIONS SUITABLE FOR INDEPENDENT STUDY OR FOR USE IN CONJUNCTION WITH A RESOURCE PERSON. MATH CONCEPTS AND MEASUREMENT SKILLS ARE EMPHASIZED THROUGHOUT. SCIENCE CONCEPTS AND ACTIVITIES ARE MORE DIFFICULT AND MORE ADVANCED THAN NORMALLY FOUND IN ELEMENTARY SCIENCE TEXT SERIES. NEEDED SUPPLIES AND EQUIPMENT ARE READILY AVAILABLE IN SCHOOLS OR ARE EASILY CONSTRUCTED.

(PAGE 2 OF 2)

GRADE: 3-4

TOPIC: LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: PROJECT IDEAS

TITLE: You Can Make an Insect Zoo

AUTHOR: Hortense Roberta Roberts

PUBLISHER: Childrens Press

COPYRIGHT: 1974

PRICE: $5.50 (64 pages)

SBN NUMBER: 0-516-07628-0

DESCRIPTION: Information is provided on a variety of insects, and suggestions for caring for them and constructing cages are included. Necessary materials can be found around the house. Insects included are lady beetles, aphids, mealybugs, ants, butterflies, moths, and crickets. Suggestions for keeping a notebook, a word list, and a list of suggested readings are provided.

GRADE: 3-6

TOPIC: LIVING THINGS

CATEGORY: PROJECT IDEAS

TITLE: You and Your Body: A Book of Experiments to Perform on Yourself

AUTHOR: Aaron E. Klein

PUBLISHER: Doubleday and Co.

COPYRIGHT: 1977

PRICE: $4.40 (95 pages)

SBN NUMBER: 0-385-05084-4

DESCRIPTION: Investigations for exploring the human body are presented. They require little or no equipment. Topics include bones, muscles, digestive processes, foods, the circulatory system, lungs, and the senses. An index is included.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER, UNIVERSE IN CHANGE

CATEGORY: PROJECT IDEAS

TITLE: The Young Rockhound's Handbook

AUTHOR: W.R.C. Shedenhelm

PUBLISHER: G.P. Putnam's Sons

COPYRIGHT: 1978

PRICE: $6.95 (127 pages)

SBN NUMBER: 399-20624-8

DESCRIPTION: This book explains how rocks and minerals are formed and describes their location, characteristics, and identification. It explains how to polish and cut minerals, prospect for gold, and collect specimens. Included are a directory of where to get materials and equipment, a list of states and probable rock and mineral locations, a list of sixty common minerals and their characteristics, and a list of reference books and magazines. An index is provided.

GIFTED SCIENCE PROJECT
Department of Instructional Planning and Development
850 Hungerford Drive Rockville, Maryland 20850
Telephone (301) 279-3500

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SCIENCE PROCESSES BIBLIOGRAPHY

The attached bibliography was compiled by the Montgomery County Public Schools (MCPS) Gifted Science Project (GSP), ESEA Title IV-C, Grantor Project Number 30-77-3-16-0039. The project's purpose was to identify science resources for individual gifted students in Grades 3-8.

This bibliography provides information about published materials individual students can use to develop skills in the processes of science. They include laboratory skills; suggestions for science problem solving; and information about the collection, processing, analysis, and presentation of data. A special effort was made by the GSP staff to include information published after 1977, although there are, no doubt, other materials available.

This bibliography does not include standard science content materials (e.g., organic chemistry or cellular biology) but instead is limited to publications that provide students with information, directions, and guidance for developing skills in the processes of science.

Because these materials are intended for use by gifted students, grade level classifications have not been assigned using standard readability formulas. Prior to constructing this bibliography, the GSP staff was not able to identify a practical set of criteria for determining grade level classifications for gifted students. Thus, the GSP staff used the following subjective criteria for assigning grade level classifications:

1. The relationship of materials to the MCPS *Program of Studies.*
2. The complexity of concepts presented in the materials (e.g., analysis, synthesis).
3. The appearance of the materials.
4. The apparent readability of the materials.
5. The materials' potential to motivate the development of science processes.

4/81

The topic that appears at the top of each selection relates to the MCPS *Program of Studies* (Energy, Lab Skills - Nature of Science, Living Things, Living Things - Environment, Matter, and Universe in Change).

This bibliography is the third of three bibliographies originally disseminated on microfiche for use by teachers. Thus, pagination of this bibliography does not begin with page 1. The first bibliography, which provides information about science-related careers, covers pages 1 to 98. The second bibliography, which provides information about ideas for science projects, begins with page 99 and ends on page 286. This bibliography covers pages 287 to 336.

NOTE: The following list identifies page numbers of titles in this bibliography which also appear in the *Project Ideas Bibliography.*

Page in *Science Processes Bibliography*	Page in *Project Ideas Bibliography*
291	159
296	169
298	175
305	177
310	199
311	200
317	219
320 - 321	241 - 242
328 - 329	263 - 264
332	278
333 - 334	279 - 280

The entry on page 289 also appears on page 33 of the *Career Information Bibliography.*

FC151091

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: Aha! Insight

AUTHOR: Martin Gardner

PUBLISHER: W.H. Freeman and Co.

COPYRIGHT: 1978

PRICE. $6.50 (179 pages, paper)

SBN NUMBER: 0-89454-001-7

DESCRIPTION: Included are problems and puzzles which encourage using insightful thinking to arrive at solutions. These types of problems are intended to be challenging and entertaining. The reader is encouraged to break away from standard problem-solving routines. The emphasis is on the development of divergent thought processes.

The problems are classified using these headings: Combinatorial aha!, Geometry aha!, Number aha!, Logic aha!, Procedural aha!, and Word aha!

Selected references and the answers to the problems are provided.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: THE CAMERA COOKBOOK

AUTHOR: NONE GIVEN

PUBLISHER: SELECTIVE EDUCATIONAL EQUIPMENT, INC.

COPYRIGHT: 1970

PRICE: $4.00 (20 PAGES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: EXPLANATIONS ARE INCLUDED ON HOW TO TAKE PHOTOGRAPHS, DEVELOP THE NEGATIVES, AND PRINT THE PHOTOGRAPHS AT HOME OR IN THE CLASSROOM. THIS IS WRITTEN AS A TEACHER'S GUIDE; HOWEVER, IT SHOULD BE USEFUL FOR THE BEGINNING PHOTOGRAPHER TO FOLLOW.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, MATTER

CATEGORY: SCIENCE PROCESSES

TITLE: CHROMATOGRAPHY

AUTHOR: GUY ALEXANDER

PUBLISHER: AMERICAN CHEMICAL SOCIETY

COPYRIGHT: 1977

PRICE: $4.50 (165 PAGES, PAPER)

SBN NUMBER: 0-8412-0277-X

DESCRIPTION: THE AUTHOR DESCRIBES HIS PERSONAL CAREER IN CHEMISTRY AND PROFESSIONAL EXPERIENCES RANGING FROM GRADUATE SCHOOL STUDIES FOR HIS DOCTORAL RESEARCH DEGREE TO HIS WORK AS AN INDUSTRIAL CHEMIST FOR PRIVATE COMPANIES. HIS SPECIALTY IS CHROMATOGRAPHY, A TECHNIQUE FOR ANALYZING COMPONENTS OF CHEMICAL COMPOUNDS.

INCLUDED ARE AN INDEX, A GLOSSARY, AND A LIST OF THE LITERATURE CITED.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: DEVELOPING A SCIENCE FAIR PROJECT

AUTHOR: VIOLET PRIESTLY

PUBLISHER: LIBRARY FILMSTRIP CENTER, WICHITA, KANSAS

COPYRIGHT: 1972

PRICE: $26.25 (47-FRAME FILMSTRIP WITH A CASSETTE TAPE)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THE STEPS AND PROCESSES A STUDENT FOLLOWS TO DEVELOP A SCIENCE FAIR PROJECT ARE PRESENTED. INLCUDED ARE SOURCES OF IDEAS FOR A PROJECT, STEPS IN PLANNING A PROJECT, TYPES AND EXAMPLES OF DISPLAYS, RECORD-KEEPING PROCEDURES, SOURCES OF SCIENCE INFORMATION (PRINTED MATERIALS AND RESOURCE PERSONS), PROJECT RULES, JUDGING PROCEDURES, A GUIDE TO SELF-EVALUATION OF A PROJECT, AND A DISCUSSION OF THE ADVANTAGES OF DOING A PROJECT.

THIS COULD BE USEFUL FOR A STUDENT INTERESTED IN DEVELOPING HIS OR HER FIRST SCIENCE FAIR PROJECT.

GRADE: 3-5

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: SCIENCE PROCESSES

TITLE: EXPLORING WITH A MICROSCOPE

AUTHOR: SEYMOUR SIMON

PUBLISHER: RANDOM HOUSE

COPYRIGHT: 1969

PRICE: $4.95 (79 PAGES)

SBN NUMBER: 394-80157-1

DESCRIPTION: THIS BOOK EXPLAINS AND ILLUSTRATES HOW TO USE A MICROSCOPE. CHAPTERS HELP THE STUDENT STUDY PROTOZOA, PLANTS, ANIMAL CELLS, INSECTS, AND NONLIVING MATERIALS. THE BOOK CONTAINS A DIRECTORY OF MICROSCOPE MANUFACTURERS AND SUPPLY HOUSES, A BIBLIOGRAPHY, AND AN INDEX.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: FIELD PHOTOGRAPHY: BEGINNING AND ADVANCED TECHNIQUES

AUTHOR: ALFRED A. BLAKER

PUBLISHER: W.H. FREEMAN AND CO.

COPYRIGHT: 1976

PRICE: $19.95 (451 PAGES)

SBN NUMBER: 0-7167-0518-4

DESCRIPTION: INFORMATION AND SUGGESTIONS ARE PROVIDED FOR CONDUCTING SCIENCE FIELD PHOTOGRAPHY. TOPICS INCLUDE EQUIPMENT, FOCUSING, FILTERS, PICTURE COMPOSITION, AND STEREOPHOTOGRAPHY. ALSO INCLUDED ARE A FILM SPEED EQUIVALENCE TABLE, PLANS FOR A DARKROOM SINK, INSTRUCTIONS FOR COPYING COLOR SLIDES TO BLACK-AND-WHITE, A BIBLIOGRAPHY, AND AN INDEX.

A SEPARATE SUPPLEMENT PAMPHLET ENTITLED FIELD PHOTOGRAPHY: FIELD-USE DATA CONTAINING CHARTS, TABLES, FORMULAS, AND SUPPORTING DATA, ACCOMPANIES THIS BOOK.

GRADE: 6-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: GRAPHIC COMMUNICATION IN SCIENCE: A GUIDE TO FORMAT, TECHNIQUES, AND TOOLS

AUTHOR: NELSON P. GUIDRY AND KENNETH B. FRYE

PUBLISHER: NATIONAL SCIENCE TEACHERS ASSOCIATION

COPYRIGHT: 1968

PRICE: $2.00 (48 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: SUGGESTIONS ARE PROVIDED ON HOW TO PLAN AND DISPLAY A SCIENCE PRESENTATION. THE TOPICS INCLUDE HOW TO CHOOSE A GRAPHIC FORM; ART TECHNIQUES; TOOLS; VARIETIES OF CHARTS; TYPES OF MAPS; AND BRIEF DESCRIPTIONS OF DIAGRAMMING TECHNIQUES, PHOTOGRAPHS, AND TABLE CONSTRUCTION. INCLUDED ARE A GLOSSARY AND BIBLIOGRAPHY.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: Handbook for Scientific Photography

AUTHOR: Alfred A. Blaker

PUBLISHER: W.H. Freeman and Co.

COPYRIGHT: 1977

PRICE: $22.50 (319 pages)

SBN NUMBER: 0-7167-0285-1

DESCRIPTION: Photographic techniques emphasizing the photography of science-related subjects are described. Suggestions and specialized information are provided on topics such as exposure, film processing, lighting, stereophotography, photomicrography, solutions to problems, preparation for publication, and mounting prints. Included are a bibliography and an index.

GRADE: 3-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: Hexstat: Probability Demonstrator

AUTHOR: Hy Ruchlis and Esther Marcus

PUBLISHER: Harcourt Brace Jovanovich

COPYRIGHT: 1965

PRICE: $5.55 (*Teacher's Manual*, 18 pages, paper)

SBN NUMBER: None Given

DESCRIPTION: The Hexstat Probability Demonstrator contains over 250 tiny steel balls sealed in clear plastic channels. The device can be used to study concepts related to probability, including randomness, chance and probability, Pascal's triangle, binomial distributions, and normal distributions. The board is held upside down to collect the balls in the reservoir. When the board is held vertically, the balls descend into a series of "Y" channels, eventually becoming distributed into nine columns. A *Teacher's Manual* accompanies the board and describes activities, lessons, and open-ended investigations.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: SCIENCE PROCESSES

TITLE: THE HIDDEN WORLD: THE STORY OF MICROSCOPIC LIFE

AUTHOR: PAUL VILLIARD

PUBLISHER: FOUR WINDS PRESS

COPYRIGHT: 1975 (89 PAGES)

PRICE: $6.50

SBN NUMBER: 590073079

DESCRIPTION: THIS BOOK TELLS HOW TO USE A MICROSCOPE TO OBSERVE MICROORGANISMS. INVESTIGATIONS ON PLANTS, ANIMALS, NON-LIVING MATERIALS, AND AIR AND WATER POLLUTION ARE DESCRIBED.

THE AUTHOR EXPLAINS HOW TO USE AND CARE FOR A MICROSCOPE, HOW TO PURCHASE INEXPENSIVE EQUIPMENT, AND HOW TO PREPARE SLIDES.

SOME MATERIALS FOR THE ACTIVITIES ARE FOUND AROUND THE HOME.

AN INDEX IS INCLUDED.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: How Did You Think of That? An Introduction to the Scientific Method

AUTHOR: David H. Killeffer

PUBLISHER: American Chemical Society

COPYRIGHT: 1969

PRICE: $3.50 (153 pages, paper)

SBN NUMBER: 8412-0163-3

DESCRIPTION: The author is a chemical engineer with experience in industrial research. This frame of reference is the basis for the discussions on identifying a problem, collecting data, conducting research, applying the findings, and communicating the information to others. Examples of early and current applied research problems are used to illustrate the problem-solving process called "the scientific method." A list of helpful books and an index are included.

GRADE:	5-8
TOPIC:	ENERGY, LAB SKILLS - NATURE OF SCIENCE, MATTER, UNIVERSE IN CHANGE
CATEGORY:	SCIENCE PROCESSES

TITLE:	How Scientists Find Out: About Matter, Space, Energy, Time
AUTHOR:	Herman Schneider
PUBLISHER:	McGraw-Hill Book Co.
COPYRIGHT:	1976
PRICE:	$7.95 (133 pages)
SBN NUMBER:	0-07-055448-X

SPECIAL INSTRUCTIONS:	Some of the suggested activities require the use of chemicals, other materials, or procedures which should be supervised by a qualified adult.
DESCRIPTION:	Included are the special procedures and techniques used by scientists to study matter, time, space, and energy. Investigations and projects are described. A bibliography and index are provided.

GRADE:	5-8
TOPIC:	ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE
CATEGORY:	SCIENCE PROCESSES

TITLE:	How To Do An Experiment
AUTHOR:	Philip Goldstein
PUBLISHER:	Harcourt, Brace, and World
COPYRIGHT:	1957
PRICE:	$4.95 (192 pages)
SBN NUMBER:	None Given

SPECIAL INSTRUCTIONS: This book is out-of-print; however, it is readily available in most secondary school libraries. Because it is a distinctive reference on scientific method, it is being cited despite this limitation.

DESCRIPTION: In this book the scientific method is thoroughly discussed. Suggestions are provided on collecting information, conducting scientific experiments, analyzing and evaluating data, and presenting results.

Elements of statistical analysis are discussed. An extensive bibliography and an index are included.

GRADE: 3-6

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: HOW TO DO A SCIENCE PROJECT

AUTHOR: DAVID WEBSTER

PUBLISHER: FRANKLIN WATTS

COPYRIGHT: 1974

PRICE: $5.95 (61 PAGES)

SBN NUMBER: 531-00817-7

DESCRIPTION: THIS BOOK GIVES SUGGESTIONS ON HOW TO DO A SCIENCE PROJECT AND THREE WAYS TO PRESENT IT: AN ORAL REPORT, WRITTEN REPORT, AND DISPLAY. PROCEDURES ARE EMPHASIZED THAT SHOULD BE USED TO DO A SUCCESSFUL RESEARCH PROJECT FROM THE PRELIMINARY OUTLINE TO THE FINAL RESULTS. INCLUDED ARE A BIBLIOGRAPHY OF BOOKS CONTAINING PROJECT IDEAS AND AN INDEX.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: How to Make Your Science Project Scientific

AUTHOR: Thomas Moorman

PUBLISHER: Atheneum

COPYRIGHT: 1978

PRICE: $7.95 (94 pages)

SBN NUMBER: 689304366

DESCRIPTION: Included are the fundamentals of scientific method, research designs, variables, principles of survey research, measurement principles, and the evaluation of experimental results. Suggestions on how to report research findings are provided. A glossary, an index, and a bibliography separated into sections for beginning and advanced students are included.

GRADE: 3-5

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: How to Read Science

AUTHOR: None Given

PUBLISHER: Filmstrip House

COPYRIGHT: 1972

PRICE: $55.00

SBN NUMBER: 843749644

DESCRIPTION: This is a kit consisting of four filmstrips, each with a cassette tape. Titles included are "Attacking New Words," "Interpreting Science Language," "Grasping Concepts," and "Reading Exercises."

Included are techniques for increasing comprehension in science study, reading, research, and communication skills.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: How to Use a Microscope

AUTHOR: W.G. Hartley

PUBLISHER: Natural History Press

COPYRIGHT: 1964

PRICE: $1.45 (225 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Because of its technical nature, this book is recommended for use in conjunction with a mentor or other qualified adult.

DESCRIPTION: This is a detailed guide to the use of a microscope. It explains manipulating and care of a microscope, the illuminating system (including special problems and methods of illumination), and the recording of microscope images. Mathematical and technical concepts and explanations and the physics of optics and light are included.

There are a glossary, a list of manufacturers, an extensive bibliography, and an index.

GRADE: 7-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: How to Write and Publish a Scientific Paper

AUTHOR: Robert A. Day

PUBLISHER: ISI Press

COPYRIGHT: 1979

PRICE: $8.95 (160 pages, paper)

SBN NUMBER: 0-89495-006-1

DESCRIPTION: This book is designed to help individuals prepare scientific papers for publication. The components of the scientific paper are described in detail and examples are provided. Among the major points covered are a definition of a scientific paper, preparation of an abstract, the design of tables, effective illustration, submitting a paper for publication, and the publication review process. Six appendixes provide additional information on abbreviations, symbols, and common errors in style, spelling, and expressions. A bibliography and index are included.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: SCIENCE PROCESSES

TITLE: *Hunting With the Microscope*, rev. ed.

AUTHOR: Gaylord Johnson and Maurice Bleifeld

PUBLISHER: Arco Publishing Co.

COPYRIGHT: 1974

PRICE: $2.25 (126 pages, paper)

SBN NUMBER: 0-668-03249-9

DESCRIPTION: Explanations are provided on the procedures and equipment needed to explore the microscopic world of plants and animals. This book gives suggestions on how to examine the following with a microscope: blood, food, fibers, fingerprints, and handwriting. Step-by-step procedures are given for the collection and preparation of specimens.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: INDEPENDENT STUDY GUIDE FOR SCHOOL RESEARCH PROJECTS

AUTHOR: NONE GIVEN

PUBLISHER: THE ALUMINUM ASSOCIATION,
818 CONNECTICUT AVENUE, NW, WASHINGTON, DC 20006

COPYRIGHT: NONE GIVEN

PRICE: FREE (4 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

DESCRIPTION: INCLUDED ARE HINTS ON GETTING STARTED ON A SCHOOL RESEARCH PROJECT, STEPS FOR DOING EXPERIMENTAL RESEARCH, TIPS ON BUILDING AN EXHIBIT AND WRITING THE FINAL PAPER, AND SOURCES OF INFORMATION.

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GRADE: 6-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: INVITATIONS TO INVESTIGATE: AN INTRODUCTION TO SCIENTIFIC EXPLORATION

AUTHOR: PAUL F. BRANDWEIN AND HY RUCHLIS

PUBLISHER: HARCOURT BRACE JOVANOVICH

COPYRIGHT: 1970

PRICE: $5.95 (159 PAGES)

SBN NUMBER: 0-15-238835-4

DESCRIPTION: THE PROCESS OF SCIENTIFIC INVESTIGATION IS DISCUSSED, BEGINNING WITH BASIC AND PROGRESSING TO COMPLEX METHODS. SUGGESTIONS ARE GIVEN FOR COLLECTING DATA, USING MEASUREMENTS, AND DESIGNING INVESTIGATIONS. EACH PHASE OF SCIENTIFIC INVESTIGATION IS ILLUSTRATED THROUGH SPECIFIC EXAMPLES OF EASILY PERFORMED AND CONTROLLED EXPERIMENTS. BIOLOGICAL AND PHYSICAL SCIENCE ACTIVITIES ARE GIVEN.

GRADE: 3-5

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER

CATEGORY: SCIENCE PROCESSES

TITLE: LABORATORY LAUGHTER

AUTHOR: DEL ALBERTI AND GEORGE MASON

PUBLISHER: ACTIVITY RESOURCES CO.

COPYRIGHT: 1974

PRICE: $4.00 (60 PAGES, PAPER)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THE TITLE IS MISLEADING. THE BOOKLET CONTAINS SCIENCE INVESTIGATIONS ON PHYSICAL AND LIFE SCIENCES. SCIENCE PROCESSES SUCH AS CLASSIFYING, PREDICTING, AND CONTROLLING VARIABLES ARE EMPHASIZED. THESE ARE MATCHED WITH MATHEMATICS TOPICS SUCH AS TIME, GEOMETRY, LINEAR MEASURE, AND PROBABILITY.

GRADE: 3

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: Measurements: And How We Use Them, rev. ed.

AUTHOR: Tillie S. Pine and Joseph Levine

PUBLISHER: McGraw-Hill Book Co.

COPYRIGHT: 1977

PRICE: $6.95 (48 pages)

SBN NUMBER: 0-07-050085-1

DESCRIPTION: Projects are presented which help the student develop measurement skills that are necessary for conducting science investigations and observations. Included are time, linear, weight, and temperature measurements.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: SCIENCE PROCESSES

TITLE: The Microscope and How to Use It

AUTHOR: Dr. George Stehli

PUBLISHER: Sterling Publishing Co.

COPYRIGHT: 1960

PRICE: $2.95 (157 pages)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: Some of the activities require the use of laboratory materials and procedures which should be used only under the supervision of a qualified adult.

DESCRIPTION: The procedures are presented for using a microscope (and auxiliary tools) and for preparing slides. The author attempts to anticipate operational problems in the procedures at the point they normally arise. This book is designed for independent work.

Other topics include: the microscopic structure of plants and animals, bacteria, microphotography, and the use of a microtome (a precision instrument for preparing thin sections of specimens). An index is included.

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS

CATEGORY: SCIENCE PROCESSES

TITLE: MICROSCOPIC ANIMALS AND PLANTS

AUTHOR: DOROTHY HINSHAW PATENT

PUBLISHER: HOLIDAY HOUSE

COPYRIGHT: 1974

PRICE: $6.95 (160 PAGES)

SBN NUMBER: 0-8234-0247-9

DESCRIPTION: INCLUDED ARE PRACTICAL INSTRUCTIONS ON HOW TO USE A MICROSCOPE AND HOW TO COLLECT AND CULTURE MICROSCOPIC ORGANISMS. THE OBSERVATION OF ONE-CELLED AND MANY-CELLED PLANTS AND ANIMALS, INVESTIGATIONS, AND PROJECTS ARE PRESENTED. A LIST OF SUPPLY HOUSES, A LIST OF SUGGESTED READINGS, AND AN INDEX ARE INCLUDED.

GRADE: 3-6

TOPIC: UNIVERSE IN CHANGE

CATEGORY. SCIENCE PROCESSES

TITLE: The Night Sky Book: An Everyday Guide to Every Night

AUTHOR: Jamie Jobb

PUBLISHER: Little, Brown and Co.

COPYRIGHT: 1977

PRICE: $7.95 (127 pages)

SBN NUMBER: 0-316-46551-8

DESCRIPTION: Activities and information concerning the day and night sky are described. The activities involve few or no materials. The topics include directions; time; altitude; navigation; the planets; stars and other celestial objects; and how to locate stars, constellations, and planets.

GRADE: 3

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: PHOTOGRAPHY: PICTURE PERFECT

AUTHOR: D. J. HERDA

PUBLISHER: RAINTREE PUBLISHERS LIMITED

COPYRIGHT: 1977

PRICE: $5.50 (48 PAGES)

SBN NUMBER: 0-8172-0017-7

DESCRIPTION: INCLUDED IS BASIC INFORMATION FOR THE BEGINNING PHOTOGRAPHER. CAMERA CONSTRUCTION, INDOOR PHOTOGRAPHY TECHNIQUES, COMMON PROBLEMS OF FLASH EQUIPMENT, AND SUBJECT SELECTION ARE DISCUSSED.

GRADE: 3

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: PHOTOGRAPHY: TAKE A LOOK

AUTHOR: D. J. HERDA

PUBLISHER: RAINTREE PUBLISHERS LIMITED

COPYRIGHT: 1977

PRICE: $5.50 (32 PAGES)

SBN NUMBER: 0-8172-0015-0

DESCRIPTION: BASIC INFORMATION FOR THE BEGINNING PHOTOGRAPHER IS PROVIDED. TOPICS INCLUDED ARE THE CAMERA; HOW A CAMERA WORKS; PARTS OF THE CAMERA; FILM, LOADING THE CAMERA; TAKING PICTURES OF PEOPLE, ANIMALS, AND PLACES; AND HAVING THE FILM DEVELOPED.

GRADE: 3

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: Photography: Through The Lens

AUTHOR: D. J. Herda

PUBLISHER: Raintree Publishers Limited

COPYRIGHT: 1977

PRICE: $5.50 (48 pages)

SBN NUMBER: 0-8172-0003-7

DESCRIPTION: Included is a discussion of advanced cameras, lighting techniques, filters, and meters used in photography. Information on inexpensive equipment for the young photographer is provided.

GRADE: 3-6

TOPIC: LAB SKILLS - NATURE OF SCIENCE, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: READING, RESEARCH, AND REPORTING IN SCIENCE: THE UNIVERSE

AUTHOR: GRAYCE A. RANSON, PH.D.

PUBLISHER: B.F.A. EDUCATIONAL MEDIA

COPYRIGHT: 1975

PRICE: $123.00 (4 CASSETTES AND FILMSTRIPS, 8 PAMPHLETS, 50 ACTIVITY CARDS, A 142-PAGE SKILL BOOK, AND A TEACHER'S GUIDE)

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: THIS MEDIA PACKAGE CAN BE PURCHASED WITH RECORDS INSTEAD OF CASSETTES FOR $111.00.

DESCRIPTION: THIS MEDIA PACKAGE CONSISTS OF SOUND FILMSTRIPS, STORY PAMPHLETS, ACTIVITY CARDS, AND SKILL SHEETS CENTERED AROUND THE TOPIC UNIVERSE AND SPACE. FOUR SUBTOPICS EXAMINED ARE THE SOLAR SYSTEM, TIME, MYTHS AND CONSTELLATIONS, AND SKY OBSERVATIONS. A BIBLIOGRAPHY FOR EACH OF THE SUBTOPICS IS PROVIDED.

THE SOUND FILMSTRIPS PROVIDE INFORMATION AND ENTERTAINMENT AND THE STORY PAMPHLETS SUPPLEMENT THE FILMSTRIPS. THE SKILL SHEETS, SUITABLE FOR REPRODUCTION, ARE DESIGNED TO REINFORCE READING AND LANGUAGE SKILLS AND EXTEND AND ENRICH THE STUDENT'S KNOWLEDGE. THE ACTIVITY CARDS ARE DESIGNED TO ENCOURAGE THE DEVELOPMENT OF READING, RESEARCH, AND REPORTING SKILLS AND CREATIVE ABILITIES.

GRADE: 3-6

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: RESEARCH IDEAS FOR YOUNG SCIENTISTS

AUTHOR: GEORGE BARR

PUBLISHER: McGRAW-HILL BOOK COMPANY

COPYRIGHT: 1958

PRICE: $6.50 (142 PAGES)

SBN NUMBER: 07-003803-1

DESCRIPTION: DIRECTIONS ARE PROVIDED FOR CARRYING OUT SCIENCE INVESTIGATIONS. THE INVESTIGATIONS INVOLVE HOUSEHOLD ITEMS OR READILY AVAILABLE MATERIALS. EMPHASIS IS PLACED ON SCIENTIFIC CONTROL, RECORD-KEEPING, CHART-MAKING, AND RELATED PROCEDURES. TOPICS INCLUDE ELECTRICITY, MAGNETISM, TRANSPORTATION, SOUND, LIGHT, THE HUMAN BODY, WEATHER, WATER, INSECTS, PLANTS, DISTANCE, AND TIME. A LIST OF ADDITIONAL BOOKS FOR EACH SUBJECT AND AN INDEX ARE INCLUDED.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: Scientific Illustration: A Guide to Biological, Zoological, and Medical Rendering Techniques, Design, Printing, and Display

AUTHOR: Phyllis Wood

PUBLISHER: Van Nostrand Reinhold

COPYRIGHT: 1979

PRICE: $16.95 (148 pages)

SBN NUMBER: 0-442-29532-4

DESCRIPTION: This comprehensive and illustrated guide teaches how to illustrate scientific material creatively. It is assumed the reader has art skills and experience. The techniques presented emphasize the final form in which the art will be used. Every step required for a finished project is described in detail. Topics include drawing, light and shadow, black and white drawing, continuous tone, color, animal illustrations, printing for publication, and exhibits. A brief career guide and an index are provided.

GRADE: 3-6

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: SETTING UP A SCIENCE PROJECT

AUTHOR: ANN STEPP

PUBLISHER: PRENTICE-HALL

COPYRIGHT: 1966

PRICE: $4.95 (56 PAGES)

SBN NUMBER: NONE GIVEN

DESCRIPTION: THE MANY FACETS OF DEVELOPING A SCIENCE PROJECT ARE DESCRIBED IN THIS BOOK. INCLUDED ARE TIPS FOR CHOOSING A PROBLEM, CONDUCTING LIBRARY RESEARCH, ORGANIZING THE PROJECT, CONDUCTING EXPERIMENTATION, AND PRESENTING THE PROJECT TO OTHERS. SUGGESTIONS ARE PROVIDED FOR CONTROLLING COSTS AND CONSTRUCTING A PROJECT DISPLAY. TWENTY POINTS FOR EVALUATING A PROJECT ARE LISTED IN THE LAST CHAPTER. AN INDEX IS INCLUDED.

GRADE: 5-7

TOPIC: MATTER

CATEGORY: SCIENCE PROCESSES

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): ANALYSIS

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.00; TEACHER'S MANUAL, $3.00

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS CALL FOR READILY AVAILABLE MATERIALS. SOME ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

(PAGE 1 OF 2)

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

The activities in the "Analysis" unit are designed to improve a student's analytical skills. Included are instructions on how to interpret and construct flow chart instructions, the separation of matter, the construction of a data table, qualitative analysis, titration, acid-base neutralization, and the evaluation of advertising claims.

GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): BALANCING

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $.80; TEACHER'S MANUAL, $2.40

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

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A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Balancing" unit are investigations on the physical and mathematical principles of a balance beam. A variety of balances illustrate the principles presented.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): MEASURING LENGTH

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, \$.80; TEACHER'S MANUAL, \$2.40

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

The investigations and exercises in the "Measuring Length" unit are designed to develop a student's skill in measuring length using metric and non-traditional units. Accuracy in making and writing measurements is emphasized.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS):
METRIC MEASURE

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $1.00; TEACHER'S MANUAL, $3.00

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER:
RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 OF 2)

DESCRIPTION: THE TASK ORIENTED PHYSICAL SCIENCE MATERIALS CONSIST OF PHYSICAL SCIENCE UNITS AND MATH/SCIENCE SKILLS UNITS. THE PHYSICAL SCIENCE UNITS INCLUDE, AMONG OTHERS, "PENDULUMS," "FLOATING AND SINKING," "ANALYSIS," "OXIDATION," "LIGHT," "SOUND," "ELECTRICITY," AND "MAGNETISM." THE MATH/SCIENCE SKILLS UNITS INCLUDE, AMONG OTHERS, "MEASURING LENGTH," "GRAPHING," "BALANCING," "WEIGHING," AND "METRIC MEASURE." OTHER UNITS ARE PLANNED FOR PUBLICATION. EACH UNIT IS COMPOSED OF SIXTEEN TO THIRTY-TWO 4 X 6 INCH "TASK CARDS" ARRANGED IN AN ORDERED, LOGICAL PROGRESSION. ENRICHMENT INVESTIGATIONS ARE INCLUDED IN EACH UNIT. THE PROCESSES OF SCIENCE AND THE MATHEMATICAL SKILLS ARE EXPLICITLY EMPHASIZED AND ARE DEVELOPED BY THE INVESTIGATIONS. THE INVESTIGATIONS COULD STIMULATE OTHER PROJECT IDEAS.

INCLUDED IN THE "METRIC MEASURE" UNIT ARE ACTIVITIES THAT WILL HELP A STUDENT DEVELOP SKILLS IN USING THE METRIC SYSTEM. ACTIVITIES EMPHASIZE THE MEASUREMENT OF AREA, CAPACITY, AND TEMPERATURE.

(PAGE 2 OF 2)

GRADE: 5-7

TOPIC: ENERGY

CATEGORY: SCIENCE PROCESSES

TITLE: Task Oriented Physical Science (TOPS): Pendulums

AUTHOR: Ron Marson

PUBLISHER: Ron Marson

COPYRIGHT: 1979

PRICE: Task card set, $.80; Teacher's manual, $2.40

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: All materials must be ordered from the author/publisher: Ron Marson, 865 Shelsteve Terrace, Vista, California 92083.

A free "Operations Manual" should be requested when an order for the materials is placed. The "Operations Manual" suggests general procedures for using the materials.

A separate "Teacher's Manual" should be ordered for each subject matter unit. Each unit can be ordered separately.

The investigations do not require special materials.

DESCRIPTION: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Pendulums" unit are the relationships of length, amplitude, frequency, and bob weight for a pendulum. Science processes and related mathematical skills can be developed by completing the unit.

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GRADE: 5-7

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: TASK ORIENTED PHYSICAL SCIENCE (TOPS): WEIGHING

AUTHOR: RON MARSON

PUBLISHER: RON MARSON

COPYRIGHT: 1979

PRICE: TASK CARD SET, $.95; TEACHER'S MANUAL, $2.85

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: ALL MATERIALS MUST BE ORDERED FROM THE AUTHOR/PUBLISHER: RON MARSON, 865 SHELSTEVE TERRACE, VISTA, CALIFORNIA 92083.

A FREE "OPERATIONS MANUAL" SHOULD BE REQUESTED WHEN AN ORDER FOR THE MATERIALS IS PLACED. THE "OPERATIONS MANUAL" SUGGESTS GENERAL PROCEDURES FOR USING THE MATERIALS.

A SEPARATE "TEACHER'S MANUAL" SHOULD BE ORDERED FOR EACH SUBJECT MATTER UNIT. EACH UNIT CAN BE ORDERED SEPARATELY.

THE INVESTIGATIONS DO NOT REQUIRE SPECIAL MATERIALS.

(PAGE 1 of 2)

Description: The Task Oriented Physical Science materials consist of physical science units and math/science skills units. The physical science units include, among others, "Pendulums," "Floating and Sinking," "Analysis," "Oxidation," "Light," "Sound," "Electricity," and "Magnetism." The math/science skills units include, among others, "Measuring Length," "Graphing," "Balancing," "Weighing," and "Metric Measure." Other units are planned for publication. Each unit is composed of sixteen to thirty-two 4 x 6 inch "task cards" arranged in an ordered, logical progression. Enrichment investigations are included in each unit. The processes of science and the mathematical skills are explicitly emphasized and are developed by the investigations. The investigations could stimulate other project ideas.

Included in the "Weighing" unit are investigations on the physical and mathematical principles of the balance scale and weight measurement standards.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: SCIENCE PROCESSES

TITLE: TURTOX SERVICE LEAFLETS, NEW SERIES

AUTHOR: NONE GIVEN

PUBLISHER: MACMILLAN SCIENCE CO.

COPYRIGHT: 1974

PRICE: $3.95, SET OF 21 LEAFLETS; $.20, EACH LEAFLET

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

DESCRIPTION: THERE ARE 21 SEPARATE TITLES IN THE NEW SERIES. EACH TITLE IS A TWO- OR FOUR-PAGE LEAFLET ON A SINGLE BIOLOGICAL TOPIC. PRACTICAL INFORMATION AND PROCEDURES FOR MAINTAINING A PARTICULAR PLANT OR ANIMAL OR METHODS FOR CONDUCTING A SCIENTIFIC ACTIVITY ARE DESCRIBED FOR EACH TOPIC. THESE CAN BE USEFUL AS SOURCES OF PROJECT IDEAS AS WELL AS BASIC SCIENCE LABORATORY TECHNIQUES. SOME EXAMPLES OF THE WIDE VARIETY OF BIOLOGICAL TOPICS ARE "BASIC MEASUREMENTS IN BIOLOGY LABORATORY," "THE SCHOOL TERRARIUM," "GETTING TO KNOW THE BRINE SHRIMP," AND "PRESENTING THE VINEGAR EEL AS A STUDY SPECIMEN." THIS IS A COMPANION SET TO TURTOX LEAFLETS, ORIGINAL SERIES.

GRADE: 7-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT

CATEGORY: SCIENCE PROCESSES

TITLE: TURTOX SERVICE LEAFLETS, ORIGINAL SERIES

AUTHOR: NONE GIVEN

PUBLISHER: MACMILLAN SCIENCE CO.

COPYRIGHT: 1958-1977

PRICE: $6.50, SET OF 50 LEAFLETS; $.20, EACH LEAFLET

SBN NUMBER: NONE GIVEN

SPECIAL INSTRUCTIONS: SOME OF THE SUGGESTED ACTIVITIES REQUIRE THE USE OF CHEMICALS, OTHER MATERIALS, OR PROCEDURES WHICH SHOULD BE SUPERVISED BY A QUALIFIED ADULT.

ACTIVITIES WHICH RESULT IN THE INHUMANE TREATMENT OF ANIMALS ARE NOT RECOMMENDED. ANY ACTIVITY INVOLVING PAIN OR DISCOMFORT THAT IS NOT A PART OF THE ANIMAL'S NATURAL ENVIRONMENT OR RESULTS IN THE DEATH OF THE ANIMAL SHOULD NOT BE DONE. SPECIFICALLY, THE PROCEDURES FOUND IN LEAFLET NUMBER 21, "PREPARATION, INJECTION AND CARE OF EMBALMED SPECIMENS," ARE NOT RECOMMENDED.

(PAGE 1 OF 2)

DESCRIPTION: THERE ARE 50 SEPARATE TITLES IN THE SET. EACH TITLE IS A TWO- OR FOUR-PAGE LEAFLET ON A SINGLE BIOLOGICAL TOPIC. PRACTICAL INFORMATION AND PROCEDURES FOR MAINTAINING A PARTICULAR PLANT OR ANIMAL OR METHODS FOR CONDUCTING A SCIENTIFIC ACTIVITY ARE DESCRIBED FOR EACH TOPIC. THESE CAN BE USEFUL AS SOURCES OF PROJECT IDEAS AS WELL AS BASIC SCIENCE LABORATORY TECHNIQUES. SOME EXAMPLES OF THE WIDE VARIETY OF BIOLOGICAL TOPICS ARE "HOW TO MAKE AN INSECT COLLECTION," "INSECTIVOROUS PLANTS," "THE STUDY OF FOSSIL SPECIMENS," "STUDYING ANTS IN OBSERVATION NESTS," AND "PLANT AND ANIMAL HORMONE EXPERIMENTS." THIS IS A COMPANION SET TO TURTOX SERVICE LEAFLETS, NEW SERIES.

(PAGE 2 OF 2)

GRADE: 5-8

TOPIC: LAB SKILLS - NATURE OF SCIENCE

CATEGORY: SCIENCE PROCESSES

TITLE: UNDERSTANDING PHOTOGRAPHY

AUTHOR: GEORGE SULLIVAN

PUBLISHER: FREDERICK WARNE & CO.

COPYRIGHT: 1972

PRICE: $6.95 (128 PAGES)

SBN NUMBER: 723260346

SPECIAL INSTRUCTIONS: THIS BOOK EXPLAINS AND ILLUSTRATES THE BASIC PRINCIPLES OF PHOTOGRAPHY AND DISCUSSES PHOTOGRAPHIC THEORY, HISTORY, AND TECHNIQUE. BASIC AND ADVANCED PHOTOGRAPHIC PRINCIPLES ARE DISCUSSED FROM BOTH TECHNICAL AND CREATIVE POINTS OF VIEW.

DESCRIPTION: TOPICS INCLUDE CHOOSING A CAMERA AND ACCESSORIES, USING A CAMERA, CAMERA CONTROLS, COMPOSITION, LIGHTING, DEVELOPING AND PRINTING, AND CAMERA CAREERS. INCLUDED ARE A GLOSSARY, BIBLIOGRAPHY, AND INDEX.

GRADE: 5-8

TOPIC: ENERGY, LAB SKILLS - NATURE OF SCIENCE, LIVING THINGS, LIVING THINGS - ENVIRONMENT, MATTER, UNIVERSE IN CHANGE

CATEGORY: SCIENCE PROCESSES

TITLE: Your Science Project, Bulletin 9847

AUTHOR: None Given

PUBLISHER: Edmund Scientific Co.

COPYRIGHT: 1960

PRICE: Free (15 pages, paper)

SBN NUMBER: None Given

SPECIAL INSTRUCTIONS: This pamphlet can be obtained from Edmund Scientific Company, 353 Edscorp Building, Barrington, New Jersey 08007.

DESCRIPTION: Suggestions for developing a science-project suitable for science fair competition are provided. Also provided are tips for developing a good project; locating project ideas; obtaining information and advice; and recording, reporting, and displaying the project.